FOR THE RADIO LISTENER

short wave magazine

August 1992 £1.75 ISSN 0037 - 4261

MODS

Manual AM/FM Switching For The PRO-32

Extra Selectivity For The FRG-8800

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short wave magazine

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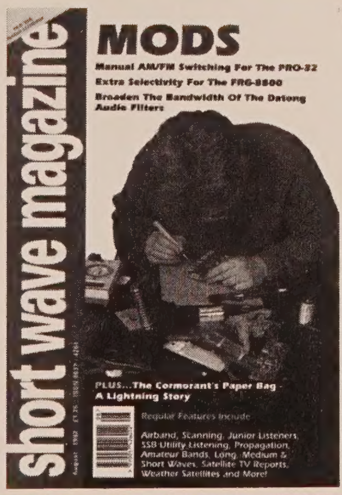
Cover:
Soldering might be part of carrying out modifications to your short wave radio, but can you guess what this chap is doing? I will tell you that he's not working on his scanner. Send in your ideas, funny or serious, to the Editor and you could win a prize!

Photo credit: Adam Hart-Davis/ Science Photo Library.



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editorial

The Letters pages in the July issue certainly generated a lot of replies on several of the topics raised. Because of the way in which the magazine is prepared - with this Editorial being the last piece to be prepared - it is not possible to include them in this issue. However, this means that next month's Letters will have to be larger than usual to accomodate them all. I have always maintained that a lively Letters section indicates a healthy magazine - if the present maibag is anything to go by *Short Wave Magazine* certainly falls into that category!

G8VFH

SWM SERVICES

Subscriptions

Subscriptions are available at £21 per annum to UK addresses £23 in Europe and £25 overseas. Subscription copies are despatched by Accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £36 (UK) £39 (Europe) and £41 (rest of world).

Components for SWM Projects

In general all components used in constructing *SWM* projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article.

The printed circuit boards for *SWM* projects are available from the *SWM* PCB Service.

Back Numbers and Binders

Limited stocks of most issues of *SWM* for the past five years are available at £1.80 each including P&P to addresses at home and overseas (by surface mail).

Binders, each taking one volume of the new style *SWM*, are available price £5.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where appropriate.

Orders for p.c.b.s, back numbers, binders and items from our Book Service should be sent to **PW Publishing Ltd., FREEPOST, Post Sales Department, Enefco House, The Quay, Poole, Dorset BH15 1PP**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in sterling.

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Poole (0202) 665524. An answering machine will accept your order out of office hours.

letters

Dear Sir

Since 1985 I have been a regular, but rather casual, short wave listener using various simple receiver, but more latterly a Sony ICF-7600DS.

However, in the last 12 months or so I have been greatly encourage by your excellent magazine and have spent more time and effort (and money too!) on this hobby. First of all I built John Tweeker's m.w. loop (Jan 1991 *SWM*), which gave excellent results with the ICF-7600DX. I then progressed to the even better Hex loop (April 1989) and made an a.t.u. which also was very worthwhile.

With the addition of the excellent C.M. Howes ASL5 s.s.b. and c.w. filter (which really cleans up noisy s.s.b. signals very effectively) and the Maplin DXer's Audio Processor I had quite a good set up.

I would like to take this opportunity to say that, whatever anyone else may advise, the a.t.u. (antenna tuning unit) is an absolutely essential part of almost any s.w.l.s set-up.

Not only can it help peak up the strength of a weak or modest and mismatched signal, but even if it cannot help much there it has the even more important function of acting as a filter, allowing through the required station at the expense of many others in the s.w., m.w., and l.w. bands,

This is the VITAL point, the a.t.u. helps prevent overload at the front end of the receiver, which causes many spurious and unwanted signals to be generated, especially if the receiver has a limited dynamic range.

I would like to thank two BRITISH companies for their extremely helpful, friendly and efficient service: Lowe Electronics in Matlock from where I recently purchase their new and absolutely superb HF-150 - what a gem! - nothing was too much for them.

Secondly, ERA in Warrington for their excellent little Microreader, which I have just upgraded with the new 4.1 EPROM, this really improves its performance vastly and also provides the facility to decode SITOR/NAVTEX and AMTOR in addition to the previously available standard RTTY and c.w. Anyone who has a Microreader really should upgrade from the old 3.2 to the 4.1 firmware.

Mike Smith
Warwickshire

Dear Sir

Very recently I had the misfortune to suffer a problem with my AOR1000 scanner. The programming became corrupted and I lost the front end of the u.h.f. airband.

The scanner was three months out of warranty. I contacted the supplying dealer who quoted me a minimum of one month to repair and return. This was doubly upsetting because with the Boscombe Down airshow only two weeks away I was looking to beg, steal or borrow a scanner.

A 'phone call to Richard Hillier at AOR (UK) gave me some hope. The scanner was dispatched at lunchtime on Monday, by lunchtime Friday my scanner was back, repaired, checked and a key pad was even replaced (for which I was not charged), and the total cost, including insured postage was very reasonable.

I am not one who would normally put pen to paper such as this, but I felt in this instance that credit should be given where credit is due.

Mike Bassan, Sutton

IF YOU HAVE ANY POINTS OF VIEW THAT YOU WANT TO AIR PLEASE WRITE TO THE EDITOR. IF YOUR LETTER IS USED YOU WILL RECEIVE A £5 VOUCHER TO SPEND ON ANY *SWM* SERVICE.

The Editor reserves the right to shorten any letters for publication but will try not to alter their sense. Letters must be original and not have been submitted to other magazines.The views expressed in letters published in this magazine are not necessarily those of *Short Wave Magazine.*

letters

Dear Sir

I just would like to tell you how pleased I am with *SWM*. Regarding its content of information it surpasses, for example, any German magazine by far and proves to be very useful for an exciting hobby.

My favourite fields are military networks in s.s.b. and c.w. - the latter being reduced very much since the disentanglement of Warsaw Pact. Using a PC database and a set of forms for each net including one 'External Infos' I can make full use of *SWM* data to be filed there. Concerning your remarks about SAC: This net has ceased to be used for its original purpose by 30 September 1991 officially.

Presently I use a R2000, two NRD 535 branched to recorders, spectrum analyser and RTTY: Wavecom 4010, Pocom and Code-3. A small box allows recording of the relative field-strength or times of traffic by using a selective a.f. filter to choose the pitch of a specific transmission and feeding a signal to the recorder in case this condition is fulfilled. A FRG-9600 for v.h.f./u.h.f. and a nearly historical 'Nuova Elletronica 551' Meteosat receiver with 1m dish completes the shack.

I would appreciate very much reading more in *SWM* about the analysis of complex RTTY transmissions as offered by Wavecom and Code-3 software as I still have some problems in understanding how to proceed exactly. Your article about ARQ/FEC was a very good start in this direction.

Fritz Nusser
Switzerland

Dear Sir

I have been an s.w.l. and *SWM* reader for a relatively short time, but am, as is Sheila Hughes of Morden, an active listener to both Polish Radio Warsaw and Radio Vilnius Lithuania.

In your May issue of *SWM* the Polish Radio schedule is out of date (*That's the trouble with long lead times - Ed*) The following is now their schedule:

1200-1300 - 11.815, 9.525, 6.135, 7.145 & 1.503MHz
1500-1600 - 11.840, 9.525 & 7.285MHz
1700-1800 - 9.525 & 7.270MHz
1930-2030 - 6.135, 9.525, 7.270, 7.145, 6.095 & 1.503MHz

They have made many changes recently but this looks like changing little for a while!

The following is Radio Vilnius schedule from May.

2130-2200 - 666kHz, 9.710, 9.675 & 1.557 (not announced)
2300-2330 - 11.780, 13.645, 15.580 and knowing them possibly 9.710 but this too is not announced.

Michael Ker
Gwent

Dear Sir

Just a short letter which your readers might find useful.

English programs of Radio Kuwait have returned to short wave daily, 1800-2100UTC on 13.620MHz. I don't know when they started again, but I first heard them on April 24.

I will welcome their return to the airwaves. I used to listen most evenings to their broadcasts. I have waited for information on their broadcasts for a long time, but found this frequency by chance; I haven't seen anything published yet.

Andy Goodwin
Shropshire

Dear Sir

In the lore of telegraphy, I would like to relate a story about Lord Louis Mountbatten when he was Signals Officer in the Navy. He had a fleet on exercises in the Mediterranean. All seaways in or near the equatorial zone suffer from virulent static on the m.f. band. He went into the radio room of the command vessel and switching on a transmitter touched the key for an 'e'. He subsequently called in every W/T log from every vessel to look for the significant 'e'. I would say that successful operators would have been issued an extra noggin of rum.

Peter Robinson
Warwickshire

Dear Sir

Are there any expatriates, holiday-makers or local inhabitants of other European countries who might be 'scanning the UK'?

It would be interesting to know how widespread the scanning hobby is abroad. Apart from those who monitor only amateur or CB, there must be considerable scope caused by differing frequency band allocations to listen to the UK from afar, using Sporadic-E or F-layer propagation. Some possibilities that spring to mind include the following.

Imagine someone based in Eastern Europe. As the east use 65-73MHz rather than 88-108MHz for their f.m. broadcast, the latter band would be free of local stations. During Sporadic-E, there would be chances of hearing UK f.m. stations as well as various other countries placed in an arc around the listener's position.

Another possibility would be of people in any part of Europe listening to p.m.r. output from the UK via Sporadic-E. Someone might be hooked on the Fire Brigade for instance, and have 'Heard all Counties' (a new award?).

The distant listener would get a total view, a sort of aerial view, compared to what we expect by line-of-sight listening. From his armchair he would, over a period, be able to explore the whole country.

While writing this, the 1992 *WRTH* landed on my doormat, and talking of East Europe f.m. broadcast stations, there are interesting changes since the previous edition that I possess (1989). The Baltic states (Estonia, Latvia and Lithuania) now give transmitter details for the various radio and TV bands. The rest of the former USSR is still lumped together, with much more l.w., m.w. and f.m. station detail, but still no TV to speak of. All these states use the CIRT band 65-73MHz and are the right distance from the UK for Sporadic-E reception. Ron Ham has mentioned the number of 65-73MHz stations he has heard, but detailed DXing might be a tough problem to crack compared to s.w. or m.w. (has anyone specialised in this?).

For one thing, there are few English segments in such purely domestic services. Secondly, the channel spacing is only 30kHz, yet a wide-band f.m. transmission occupies about 200kHz of bandwidth, which when being monitored on w.f.m. mode would seem wider still. The net result is that you have about ten stations to choose from for a given frequency displayed on your l.c.d.

The Eastern Bloc has increased the number of 88-108MHz stations, again by consulting the new *WRTH*. There are about 68 stations now compared to 31 in 1989. I wonder if they intend to move to our band and gradually close their one down? This would be sad for Sporadic-E studies.

Richard Gosnell G4MUF
Swindon

Dear Sir

I would like to say how much I enjoy your magazine. As a comparative newcomer to s.w.l. I have learnt a lot from your pages over the last year or so.

I would like to mention two companies who advertise in *SWM*. I recently visited Waters and Stanton of Hockley and found then a very fair company to do business with. Their staff were polite, informed and above all patient - they had time to answer my many questions.

Also C.M. Howes, from whom I received a kit just three days after sending the order.

On a different subject, it would be nice if some of the amateur stations would give their callsigns at a speed at which they can be written down. So many of them finish an over with a burst of letters and numbers that even playing a tape back at slow speed fails to untangle the all important callsign.

R. Nice
Felixstowe

junior listener

Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

Books, Books & More Books

It's books to start with this month. First, I've received the results of the 1992 Science Book Prize that I mentioned a couple of months back. The Junior prize was won jointly by *The Amazing Voyage of the Cucumber Sandwich* by Peter Rowan and *How Nature Works* by David Burnie.

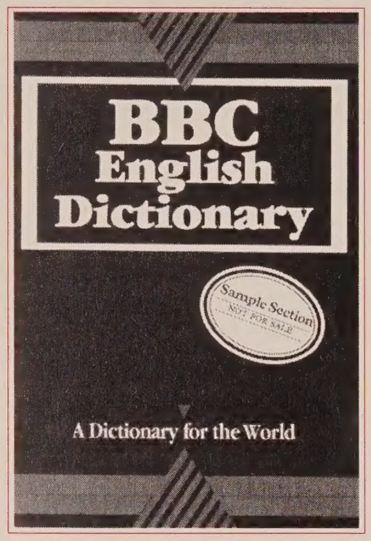
The next book also doesn't have anything to do directly with radio, but it is so good I thought I'd tell you about it anyway. It's the *BBC English Dictionary*. Apparently, four years of the BBC World Service radio broadcasts and millions of words of output have been analysed by computer to produce this dictionary - can you image how much information must have been processed!

Over 70 million words of news, current affairs and sports output were analysed. These were then fed into Cobuild's computerised 'Bank of English' (a 150 million words database).

What makes this so different is that it is a cross between and encyclopaedia and a dictionary. It tells you how the word should (or shouldn't) be used in a sentence and gives an example of a sentence using the word, this helps with understanding the meaning.

As it was only completed in January this year, it's about as up-to-date as you can get. As I said, it's got nothing to do with radio, but it came about from a radio station, so that's my link!

The dictionary costs £14.95 for a hardback version and should be available from good bookshops, but I expect that many schools will be investing in these books.



BBC English Dictionary

Sample Section NOT FOR SALE

A Dictionary for the World

Dubai Radio

Another station who actively look for reports is Dubai Radio. Your reception report to them should include:

1: Your name and address printed clearly.

2: The date and time of reception in UTC (same as GMT).

3: The frequency on which you heard Dubai Radio as accurately as you can manage.

4: Several details of the programme heard so they can verify that you actually heard Dubai Radio

5: Your assessment of their signal using the SIO code

6: They would also appreciate reports of their other frequencies directed to your area at the same time,including those poorly received or not heard

7: A description of your station.

Their QSL address is: Dubai Radio, External Services, PO Box 1695, Dubai, United Arab Emirates.

They broadcast to Europe from 0612-2100 on 13.675MHz; 0615-1545 on 15.435MHz, 0615-1645 on 21.605MHz; 1600-2100 on 11.796MHz and 1700-2100 on 15.400MHz. English news bulletins are broadcast at 0330, 0530, 1030, 1330 and 1630UTC.

German Lessons?

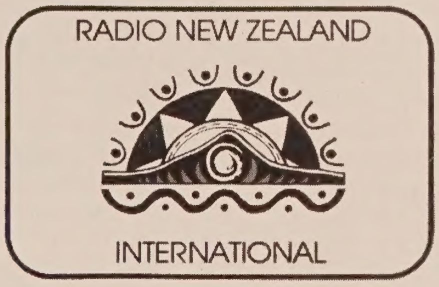
If you are studying German as school, then a German language course for beginners may be of help. It is transmitted every Wednesday by Deutschlandfunk from 1900 to 1915BST and repeated the following Saturday at the same time on 236.4m medium wave, 1.269MHz ASTRA satellite, transponder 6 on the audio sub-carrier 7.74MHz of SAT 1. If you would like a course booklet send your name and address to Deutschlandfunk - English Service, PO Box 51 06 40, W-5000 Cologne 51, Germany.

News from Japan

Radio Japan is a station who welcomes reports from listeners, they must do as they receive about 90 000 letters from listeners each year. Each report gets a QSL card and the latest publicity material and they look forward to comments and suggestion on their programming.

Radio Japan is the country's international voice on short wave. It is run by NHK, Japan's only public service broadcaster. Radio Japan began in 1935 and now broadcasts 48 hours in 22 languages daily - yes that is possible if you transmit on more than one frequency at a time.

Media Roundup is a programme about short wave radio broadcasting and also things like high definition TV, antennas, satellite broadcasting and other scientific subjects. I think it goes out on Sundays between 1530 and 1555, 2130 and 2155 and 0130 and 0155 if I've read the latest schedule right! Frequencies like 11.865, 17.890 and 15.195MHz could be tried. I've no doubt if I'm wrong, someone will set me straight soon enough! Their QSL address is Radio Japan/NHK, Tokyo, 150-01 Japan.



Radio New Zealand

On June 2, Radio New Zealand introduced a new design of sticker into their range of goodies. Although their programmes are not actually designed for reception in the UK, they do get plenty of reports from UK listeners. Their *Mailbox* programme with Tony King on alternate Thursdays at 0840 on 9.7MHz is always worth a listen. Reception reports are welcome and for a **prompt** QSL response, your report should be accompanied by 3 IRCs. Radio New Zealand International, PO Box 2092, Wellington, New Zealand.

Next Month

In the next issue, I'll be taking as closer look at the Novice Licence and looking at a couple of receivers that you might like to put on your Christmas list!

Better Reception

From the letters I get I know many of you are using portable short wave receivers rather than bench mounted communications receivers. Although this is a great way to start, one of the main limitations is often the in-built telescopic antenna. While this is usually fine for general domestic listening, it's not so good when you're chasing that rare DX station. There are two main problems with these antennas - they're too short and in the wrong location. By the wrong location I mean that the antenna should, ideally, be as far away as possible from any sources of interference. With the modern home being full of electrical devices it's not surprising to find all manner of interference problems. So what can you do? If your receiver has an external antenna socket, I would strongly recommend you make good use of it and install a simple long wire antenna. This should be as long as you can manage and located as far away as possible from any interference. Don't worry about running it in a straight line - you can put in all manner of bends without degrading its performance.

If you don't have an external antenna socket all is not lost as you can connect a long wire to the collapsed telescopic antenna. Although not as good as a proper socket it's generally better than nothing. The only exception to this is when trying to sort out a few very strong signals. With the simpler receivers you'll find that adding an external antenna may well cause the receiver to overload, in which case you're better off with the telescopic until the interfering station goes away.

If any of you have any useful tips for improving reception from simple receivers, I'd be very pleased to hear from you.

news

Radio Habana Cuba

Radio Habana Cuba will start regular single sideband broadcasts using upper sideband, 10% carrier for evaluation purposes. The transmitter will be a 30kW Siemens unit connected to several antennas, including their North Europe antenna.

Reports should be sent to:
Radio Habana Cuba, Apartado 7026, La Habana, Cuba.

RAE Courses

Bradford: The Bradford & Ilkley Community College will again be running courses for the Radio Amateur's Examination and the Morse Test. Enrolment times are September 8, 9 & 10 during the hours of 0930-1600 and 1800-2000. Late enrolments will be accepted. Course tutor is P.M. Nurse G0IFT. Further details from: **Bradford & Ilkley Community College, Great Horton Road, Bradford, West Yorkshire BD7 1AY. Or Tel: (0274) 753371 or 753377.**

London: The City of Westminster College (formerly Paddington College) will be running a Radio Amateur's Examination (RAE) evening course commencing early September 1992 (for May 1993 examination). Both Class A and Class B licences will be catered for (i.e. a Morse course will run concurrently). Additionally, an Advanced Morse course is hoped to be conducted, taking candidates up to 22/25 w.p.m. with insight to professional/ marine procedures, etc.

Professional college lecturers will conduct the course. Prospective candidates should contact the **College - Science & Technology Dept - Ann James. Tel: 071-723 8826** soonest for enrolment details, etc.

Brighton: Brighton College of Technology are running the next Radio Amateur course from Monday September 14. Two evenings classes are available. Mondays from 6-8.30pm covers the theory necessary to pass the C&G RAE. Wednesdays, also from 6 to 8.30pm for Morse and practical project building. Enrolment fees cover the cost of all notes and paperwork. For further details. **Tel: (0273) 667788 ext 605 or 730.**

Computer Fairs

There have now been over 40 All Formats Computer Fairs all over the country. Between one and two hundred trestle tables at every Fair, games consoles sell next to 486 PCs. The Autumn programme looks like this:

September 5 - National Motorcycle Museum, Birmingham
September 12 - Sandown Racecourse, Esher
September 19 - Donington Racecourse, East Midlands
October 3 - Northumbria Centre, Washington
October 4 - University Sports Centre, Leeds
October 10 - Assembly Rooms, Edinburgh
October 11 - City Hall, Candleriggs, Glasgow
October 17 - Novotel, Hammersmith
October 18 - Brunel Centre, Temple Meads, Bristol
October 24 - Haydock Park Racecourse
November 1 - University Sports Centre, Leeds
November 6 - National Motorcycle Museum, Birmingham
November 7 - Sandown Racecourse, Esher
November 8 - Southampton
November 14 - Novotel, Hammersmith
November 15 - Brunel Centre, Temple Meads, Bristol
November 21 - Donington Racecourse
November 22 - Northumbria Centre, Washington
November 28 - Haydock Park Racecourse
November 29 - City Hall, Candleriggs, Glasgow
December 5 - National Motorcycle Museum, Birmingham
December 12 - Sandown Racecourse, Esher

Roberts Radios

Roberts Radio have introduced some new radios to their 'Lifestyle' world radio range. The RC818 has a total of 45 programmable memories, five tuning methods, a clock alarm and dual time display. Provision is made for reception of single sideband and c.w. transmissions as well as stereo f.m. (headphones only). The tuning range for the s.w. section is 1.621 to 29.999. The cassette section can be pre-set to record in advance using the clock facility, while a clear liquid crystal displays all functions so the user knows what the radio is doing. The price for the radio is £199.99 from your local Roberts dealer and was reviewed in *SWM* July '92.

The R808 has many of the features of the larger 808, it also has 45 programmable memories and dual time display. Standby clock alarm and tri-colour display add extra value to this radio, although it does not have a b.f.o. The price for this radio is approximately £120.

To find out where your local Roberts Radio dealer is, contact: **Roberts Radio Co. Ltd., 127 Molesey Avenue, West Molesey, Surrey KT8 2RL. Tel: 081-979 7474.**

Samuel Morse Bicentennial Award

If you tried contacting the stations you needed during April and May 1991 for this award, then you only have until the end of August to apply for the award. If you've forgotten the scoring, or lost the rules, contact:
J. Harvey, 38 Bodenham Road, Northfield B31 5DS. Tel: 021-477 7447.

Gunn Diodes

Gunn devices generate energy at microwave frequencies from a d.c. power input and have many applications such as short range communications links and motion detection. The diodes are produced from expitaxial gallium arsenide grown in the manufacturer's own in-house epitaxy facility.

The X band (8.2-12.4GHz) diodes are available with 10, 20 and 30mW power ratings and operate from an 8V d.c. supply. The K band (18-26.5MHz) diodes have 5, 10 and 20mW power ratings and operate from a 5V d.c. supply The actual frequency of operation is dependent on the circuit/cavity resonance. All diodes are house in a standard anode heat sink package, other frequency ranges and packages are also available.

**Cirkit Distribution Ltd. Park Lane, Broxbourne, Herts EN10 7NQ.
Tel: (0992) 441306.**

RAIBC Appeal

Since BP withdrew their Lifestyle tokens from circulation late in 1991, replacing them with the new Options vouchers, Lifestyle tokens are no longer valid to exchange for goods by the general public.

However, within the new charitable option recently launched in their new catalogue, it allows charitable organisations such as the RAIBC (NI) to surrender these old vouchers for the next few months.

The RAIBC (NI) can use these old vouchers together with those from all other companies, including Air Miles, to purchase radio equipment and provide home study course on audio tape, for the blind and disabled in the community.

To date they have purchased and distributed more than £25 000 of equipment in the Province, using this method of fund raising. They do not ask the public for money as there are so many organisations looking for cash.

If you have any tokens no matter what brand they are, and you do not wish to use them yourself, please consider them and post them FREE OF CHARGE to the following address:
RAIBC (NI), FREEPOST BE1769, Belfast BT12 5BR.

Special Event Stations

Wirral & District ARC will be operating a special event station from the Lighthouse at New Brighton on Merseyside using the callsign **GB8TS** as part of the Grand Regatta Columbus '92 celebrations.

Tall Ships, sailing ships of all shapes and sizes, from all over the world, will visit the port for nearly a week. They will have recreated Christopher Columbus' historic voyage of 500 years ago, when he discovered America.

The station will be operational from Thursday August 13 when all the ships should be in port, until they depart in a grand parade of sail on Sunday 16th. Popular h.f. bands and some v.h.f. working will take place.

As an added point of interest, to those who like to work lighthouses on clumps of rocks in the sea, Perch Rock is in SJ39 for the purposes of the WAB awards. A rather unusual QSL card, befitting of the event and location, has been designed to send to those who send in their confirmation of working the station as well as for short wave listeners. All QSLs via the Bureau, please. All QSLs will be acknowledged.

Gerry Scott G8TRY. 19 Penkett Road, Wallasey, Merseyside L45 7QF. Tel: 051-630 1393.

GM0PNS will be active for approximately 7 days from 9/10 August from Pabay near Skye. Operation will be on h.f. from 80-10m on s.s.b. and c.w. Depending on the results achieved, operation from other islands in this part of Scotland may take place of the coming years.

Contacts will be confirmed by a special QSL. Radio amateurs who are also philatelists will be interested to know that Pabay is licensed to issue its own stamps. A special stamp is being issued to mark the event and a cover envelope with the stamp together with information on Pabay is available at £1.00.

To be certain of cards, QSL direct, cards will be returned via the RSGB QSL Bureau unless the special stamp is requested (as above). Please note that this is no way infers that they are charging for QSL cards, as requests for direct QSLs will be sent via the normal postal system, posted on the mainland after the event. The island of Pabay is located 2.5 miles from the village of Broadford on the south side of the Isle of Skye, NGR 675270.

QSL Address: GM0PNS. Isle of Pabay, Broadford, Isle of Skye IV49 9BP.

Stolen

Over the Easter holiday, Waters & Stanton had a container load of Micronet equipment stolen from a car park in the Midlands. If any readers can be of any help in tracing these goods, please contact:

Waters & Stanton Electronics. 22 Main Road, Hockley, Essex SS5 4QS. Tel: (0702) 206835.

FEBC Tests

FEBC, Philippines has recently installed a new Continental 100kW transmitter at their Bocaue site. It began test transmissions on Monday April 20. They are eager for reception reports so they can see how well they can be heard.

The test broadcasts are as follows:

Khmu (Sat/Sun only)
2215-2230UTC, 9.875MHz 260°
Lao
2230-2300UTC 9.875MHz 260°
Hmong
2300-2330UTC 9.875MHz 260°
Burmese
2330-0130UTC 15.460MHz 293°
Indonesian
0830-1030UTC 11.995MHz 210°
Cambodian
1200-1300UTC 11.690MHz 280°
English
1300-1600UTC 11.995MHz 280°

Reception reports for any of these broadcasts will be QSLed.

FEBC. Box 1, Valenzuela, Metro Manila, Philippines 1405.

First Aid

As a green as grass newcomer to s.w.l.ing, I have acquired a MARC double conversion receiver, with bands comprising l.w., m.w., m.b., 4 x s.w. 40kHz-30MHz and 3 x v.h.f. f.m., u.h.f., l.s.b., u.s.b., b.f.o. Unfortunately there is no paperwork with it. Hopefully someone may be able to throw some light on the matter. I will gladly pay any expense incurred for photocopies, etc.

Gerald Cowell. 28 Dunster Road, Worsley, Lancs M28 4AY.

New DX-TV Converters

Two new DX-TV converters have recently been introduced by HS Publications.

The first is the popular D-100 'De-Luxe' with an automatic band scanning facility enabling the DXer to preview the most productive v.h.f. or u.h.f. channels when an opening is imminent.

The new unit features variable and switchable vision i.f. bandwidth for weak signal enhancement plus multi-system sound that is heard via an f.m. radio. An optional a.m. to f.m. adaptor is available for monitoring French TV a.m. sound.

The D-100 with bandscan costs £99.99 and the a.m. to f.m. adaptor costs £19.95. Both prices include UK postage and packing.

The second is a low-cost simple-to-use DXTV tuning system designed as a superior alternative to a v.h.f./u.h.f. upconverter. Known as the D-400, it also features variable vision i.f. bandwidth (6-3MHz approximately) and covers the most productive v.h.f. and u.h.f. DXing channels:

Bands I/II: Channels NZ1 to R4
Band III: M4-E12
UHF: E21 to 50 approximately

The D-400 operates from 13-28V d.c. or from a 220/240V mains supply using the adaptor supplied. The D-400 costs £49.95 (UK post free).

For further details, contact: **HS Publications, 7 Epping Close, Derby DE3 4HR. Tel: (0332) 381699.**

Silver Jubilee

The White Rose ARS are celebrating their Silver Jubilee with a barbecue, family fun and open day on Sunday August 30. The venue is Moortown RUFC, Moss Valley, King Lane, Leeds. Listen out for the special callsign **GB0WRR** (White Rose Radio) active from August 16.

Betty Cappelluto, 7 Rycroft Place, Leeds. Tel: (0532) 555488.

Stealth Antenna

The Stealth Antenna is a tiny 90mm square of 0.8mm thick copper-clad polymide coated with a non-corrosive graphite coloured coasting that adheres to the inside of the car windscreen. Without a highly visible external antenna, thieves are less likely to be attracted to a vehicle in search of an expensive transceiver to steal.

Despite its small size, the Stealth Antenna out-performs a quarter wave whip under many circumstances, claim the manufacturers. The etched copper antenna is multi-polarised to reduce QSB caused by the varying polarisation of signals received in a moving vehicle. The antenna presents a low s.w.r. over the entire band and requires no adjustments of tuning.

Best of all, the Stealth Antenna can be installed without drilling holes, or risking paint scratches from magnets or suction cups. Once installed, it is inside the vehicle, protected from the elements and never in the way in a car wash or low garage.

The Stealth Antenna is available in models for 146 and 440MHz. The standard model can handle 50W of input power and costs $59.95 (shipping overseas is extra).

j.Com, Box 194, Ben Lomond, CA 95005. Tel: (408) 335-9120 or FAX: (408) 335-9121. Credit cards are accepted.

When it comes to sheer know-how
Lōōk to Lowe

The NRD-535 with a subtle difference

JRC
14.20000
BAND WIDTH
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TUNING RATE
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ATT
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AM
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BWC
PBS
PHONES
RECORD
SQUELCH
NOTCH
RF GAIN
CLR
MHz
ENT/kHz
NRD-535 HF RECEIVER
AF GAIN
TONE

The NRD-535 is a fine receiver, and fully confirms the JRC leadership in this particular field. However, even the best can be improved in specific areas; and after lengthy evaluation of the NRD-535 we decided that there were worthwhile improvements which we at Lowe, with our knowledge and specialist expertise could introduce to the more discerning listener – for it is the true "listener" who will appreciate what we have done.

First; we thought that the audio from the NRD-535 was not totally easy on the ear, and detailed investigation showed that the audio response had been "tailored" to suit the rather round shouldered response of the IF filtering. So, we went back to the IF filters and specified a higher performance SSB crystal filter with a 6dB bandwidth of 2.4kHz and a typical shape factor of 1.8:1; with less than 1dB passband ripple. For AM, we fit a more expensive filter with a 6dB passband of 5.7kHz and a shape factor of 1.5:1. The response of these new filters is very flat within the pass band, with steep symmetrical sides giving excellent adjacent channel rejection. The use of these more expensive filters allowed us to flatten the audio response of the receiver giving a much cleaner sound quality and a real improvement in intelligibility both on communications and broadcast stations.

We have noticed in the past that the audio output power from most modern receivers is barely adequate for driving a good loudspeaker, and since we now had top quality audio from the NRD-535, we designed and fitted a completely new audio power amplifier with enough power (3W at 5% distortion) to enable the user to sit back and enjoy that quality to the full.

The use of synchronous AM demodulation and/or ECSS is an established feature of many newer receivers, and fitting the optional CMF-78 ECSS board to the NRD-535 provides the user with the potential to recover good audio from signals which are subject to selective fading.

However we noticed a tendency for the ECSS to unlock during deep fades and then fail to re-lock after the fade. We now have a series of detailed modifications to the ECSS unit which removes this tendency and also improves the recovered audio.

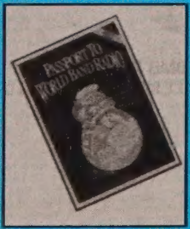
The Lowe Electronics modification pack definitely makes a good receiver into an outstanding receiver. When we sent a sample of our modified NRD-535 to Jonathan Marks at Radio Nederland, he confirmed that the results were quite remarkable and said so in no uncertain terms. We think that you will agree.

Naturally, these modifications cost a little more, but to complete the whole package we also pre-age the master reference oscillator in the receiver, check out the alignment, and issue an individual test certificate with each one. And because we are proud of our work we add a discreet badge to the front panel to tell you that you own a receiver with a difference.

The "Lowe" NRD-535. We make a good receiver into an outstanding receiver.

- New high specification IF crystal filter for SSB
- New high specification IF filter for AM
- New calculated audio bandwidth "flattening".
- New higher power audio output system.
- New tighter specification ECSS system.
- Pre-ageing and "burn-in" of master oscillator.
- Individual test certificate for each receiver.

NRD-535	**£1195**
CMF-78 ECSS unit	**£239**
Lowe modifications	**£117**
Carriage	**£10**



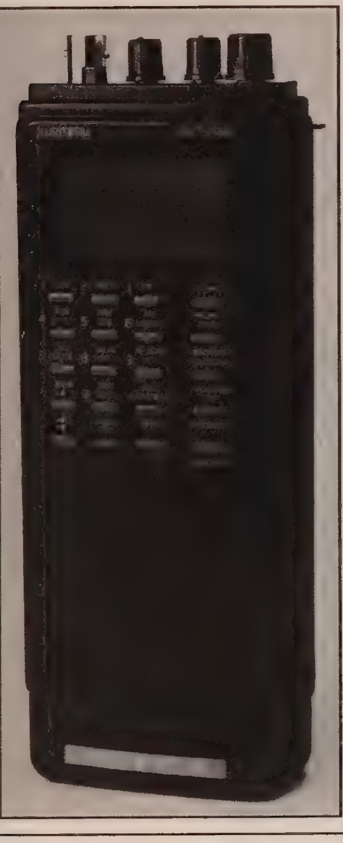
THE LISTENERS' BOOK OF THE YEAR GETS EVEN BETTER

The new 1992 issue of 'Passport to World Band Radio' is now with us and it's even better than before. The 200 pages have risen to almost 400 and every section carries the unmistakable authority of the world's best short wave companion.
Broadcasts are listed as before; not only in frequency order but also by language, country of origin AND the times of broadcasts.
There are no less than 56 pages or receiver reviews, including the latest NRD-535 and Drake R-8, together with news, views and general information.
If you own a short wave radio, you MUST have the 'Passport' by its side. The price last year was £12.95; we have kept the price the same this year at £12.95 (plus £1.55 p&p.). Send off today.

LOWE

LOWE ELECTRONICS LIMITED
Chesterfield Road, Matlock, Derbyshire DE4 5LE Telephone: 0629 580800 Fax: 0629 580020

For the very best in Communications Receivers
Lōōk to Lowe



VHF/UHF RECEIVERS.
We stock the lot – from AOR to YUPITERU

Although our real love is HF, we recognise that many folk find that a handy VHF/UHF scanner provides a lot of listening enjoyment, and we stock all of the popular makes.

We also insist on telling the truth about them, and there are a couple of basic rules to observe. First, I know that they say the scanners will cover from 500kHz to 1300MHz, but if you think that they will perform on short wave – forget it. They are all barely adequate (except the AR-3000A but that's in a class of its own). Secondly, if you want to particularly listen to airband, for goodness sake buy a dedicated airband scanner because it will handsomely out-perform all of the wide frequency range receivers, (except again the AR-3000A).

Currently top of the shop are the VT-225 and VT-125 from Yupiteru. Daft name, but good gear. The VT-125 is VHF airband only, and the VT-225 gives both VHF and UHF airband. Prices are good at £149 for the 125 and £229 for the 225.

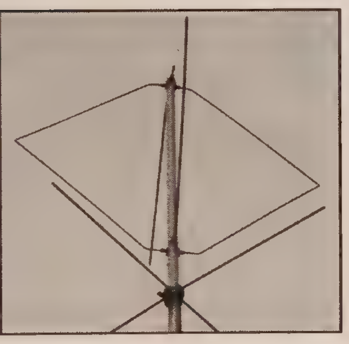
For wide range scanning, the MVT-7000 has established a good reputation for styling, ease of use, and good performance. Full coverage and 200 memory channels. Nice one. £289.

The new AR-1500 from AOR is interesting, because it is the first hand-held to offer a BFO for receiving SSB on short wave. (It covers 500kHz to 1300MHz by the way). My first reaction to its announcement was less than enthusiastic, but even I will say that it can make a reasonable job of SSB even though it is a long way from being a short wave receiver. Small and handy, the AR-1500 comes in at £279.

The AR-3000A – now this does stir the blood because it is an amazing achievement. To pack such a receiver in such a small package takes a lot of engineering, but the performance is excellent, and I can recommend it – only snag is the price, but for £765 it's a H*** of a good radio.

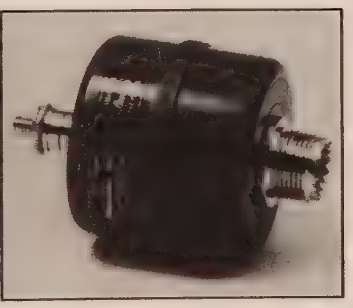
Want to know more? Just ask for full details at any of our branches, or send 4 first class stamps and request the "Airband Pack". Call in and see us soon for all that's good in receiving – DC to light.

RF SYSTEMS PRODUCTS



DX-One Electronic Antenna

Not cheap – but as World Radio TV Handbook said:- "…the best of its type available anywhere in the world". The DX-One is an outdoor active antenna for the range 50kHz to 50MHz, and cannot be bettered.....**£249 inc VAT**



Magnetic Longwire Balun

Transform (that's a pun) your short wave listening with the MLB. Described in the trade press as "the most revolutionary development for short wave listeners in the last 25 years." You have to believe that with a modest length of wire fed via the MLB, your reception will improve substantially, and the noise will go down.............................**£36 inc VAT**

MLB Antenna Mark I

Complete wire antenna including the MLB. 12.5 metres long. Frequency range 100kHz to 40MHz.........................**£56 inc VAT**

MLB Antenna Mark II

Similar to the MLB Mark I but 20 metres long for improved performance at medium and long wave......................**£67 inc VAT**

Coming soon. The new DX-7 active aerial as described on Radio Netherlands this week. The answer to the flat dwellers' prayer.

STOP PRESS

At last in stock, the long-awaited T2FD low noise receiving aerial. Contact our sales desk at Matlock for full details.

T2FD – £149.95 in VAT

FREE

Send four first class stamps to cover the postage and we will send you, by return, your FREE copy of 'THE LISTENERS GUIDE' (2nd edition); a commonsense look at radio listening on the LF, MF and HF bands. Its unique style will, I am sure, result in a 'good read'; but underneath the humour lies a wealth of experience and expertise. You will also receive detailed leaflets on our range of receivers and a copy of our current price list.

Access

VISA

LOWE *PRIVILEGE* MEMBERSHIP CARD

Personal Number: 100000

BOURNEMOUTH: 27 Gillam Road, Northbourne Tel: 0202 577760
BRISTOL: 6 Ferry Steps Industrial Estate Tel: 0272 771770 **CAMBRIDGE:** 162 High Street, Chesterton Tel: 0223 311230
CUMBERNAULD: Cumbernauld Airport Foyer Tel: 0236 721004 **LONDON (HEATHROW):** 6 Cherwell Close, Langley Tel: 0753 545255
LONDON (MIDDX): 223/225 Field End Road, Eastcote Tel: 081-429 3256 **NEWCASTLE:** Newcastle International Airport Tel: 0661 860418

LOWE ELECTRONICS

The new SRX-50 from Lowe

A Price Breakthrough in Shortwave Listening

Only £39.95

PLL SYNTHESIZER RECEIVER
HOUR
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MIN
ALARM ON/OFF
SLEEP
KEY LOCK
OFF ON
IV
III
II
I
DISPLAY
LIGHT
MEMORY
STEREO
AUTO SCAN
LOWE
SRX-50

For the beginner who wants to try out the fascination of short wave listening;

For the experienced short wave enthusiast who needs a Go-Anywhere portable;

For anyone who just wants to keep in touch, the SRX-50 is an amazing receiver.

Just look at the features:-

- Quartz controlled PLL synthesised for accuracy.
- Clear digital LCD frequency readout.
- Coverage of :-
  Long wave (153-281kHz AM),
  Medium wave (531-1602kHz AM),
  Short wave (5.9-15.5MHz AM)
  and even stereo FM broadcast (87.5-108MHz).
- Direct preset, manual or AUTO scan tuning.
- Supplied with stereo earphones.
- 20 memories (5 on each band) for storage and recall of favourite frequencies.
- 24 hour digital clock with alarm and timer function.

The Constant Companion

Now you have your SRX-50, the perfect accessory has to be the "Passport to World Band Radio". Almost 400 pages of the latest information on short wave stations will help you to find the service you need in an instant. All listed by frequency, language, time of day; the "Passport" is your constant guide.

Our price £12.95 plus £1.55 postage. (post free when ordered with SRX-50)

Retailed in the UK by LOWE ELECTRONICS LIMITED

Chesterfield Road, Matlock, Derbyshire DE4 5LE Telephone: 0629 580800 Fax:0629 580020

grassroots

rallies

* Short Wave Magazine & Practical Wireless in attendance *

July 26: The Rugby ATS 4th Annual Amateur Radio Car Boot Sale will be held at the BP Truckstop on the A5, 3 miles east of Rugby. Open from 10am, admission is £1 per car and facilities include a good cafeteria and toilets. Talk-in on S22 by GB6CBS. Pitches are £7 pre-booked or £9 on the day. **Peter. Tel: (0455) 552449** or **Kevin (for bookings). Tel: (0203) 441590.**

***July 26**: The Scarborough Radio, Electronics & Computer Rally will be held in The Spa, South Foreshore, Scarborough. Doors open 11am.

August 9: The Annual Derby Rally will take place this year at the Littleover Community School, Pastures Hill, Littleover, Derby.

August 30: The Galashiels Club will hold their Open Day from 11 to 4.30pm at the Focus Centre, Livingstone Place, Galashiels. **John Campbell. Tel: (0835) 22686.**

August 31: Huntingdon ARS will be holding their annual Rally and Junk Sale at the Medway Centre, Coneygeare Road, Huntingdon. Doors open 11am, close at 4pm. Trade stands, Bring & Buy, Components, Junk and the usual refreshment bar will be there. Car boot pitches are available. **David Leach G7DIU. Tel: (0480) 431333.**

September 6: The Vange ARS are holding their rally in the Laindon Community Centre, Laindon High Road/Aston Road, Laindon, Basildon, a short walk from Laindon Station (B R) on the Fenchurch Street to Shoeburyness Line. Doors open 10.30am to 4.30pm, admission is 75p with free raffle. Talk-in on S22. Roads will be signposted. **Mike Musgrave. Tel: (0268) 543025.**

***September 6**: Bristol Radio Rally will be held in Brunel's Great Train Shed, Temple Meads Station, Bristol. Lots of traders in an historic venue.

September 12: The Scottish National AR Convention will be held at the Fife Institute of Physical & Recreational Education, Viewfield Industrial Estate, Glenrothes, Fife. Doors open 11am to 5pm.

***September 13**: The 11th Lincoln Hamfest will be held at the Lincolnshire Showground and Exhibition Centre, 4 miles north of the city on the A15 Scunthorpe Road. As well as the usual amateur radio stands, they hope to have helicopter rides, model car racing and model aircraft displays. Refreshments (hot & cold/inside & outside) and licensed bar with real ale. **Sue Middleton. Tel: (0522) 531788.**

***September 13**: The BARTG Rally will be held at Sandown Park Exhibition Centre, Esher, Surrey. **Peter Nicol G8VXY. Tel: 021-453 2676.**

September 13: The Telford Rally will be held in the Telford Exhibition Centre, Telford, Shropshire. Doors open 10.30am. Admission is £1. Traders, flea market, restaurants, bars, free parking, NO Bring & Buy.

September 20: The East of England Radio Rally (Peterborough R & ES) will be held in the ICI Building, The East of England Showground, Peterborough. Admission £1 Doors open 10.30am (10am for the disabled). **Mike Bowthorpe G0CVZ. Tel: (0733) 222588.**

September 20: The Centre of England Radio Computer & Satellite Rally will be held at the British Motorcycle Museum, Bickenhill, near the NEC, Birmingham. Doors open 11.30am. Admission £1, OAPs 50p, children under 14 free. Over 60 traders in three large exhibition halls, talk-in on S22, bar & restaurant, free parking, concessionary rates to museum. **Frank Martin G4UMF. Tel: (0952) 598173.**

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. August 18 - Open Discussion on Radio. Paul Truitt G4WQO. 071-938 2561.

Aylesbury Vale RS: Wednesdays. The Village Hall, Hardwick. August 5 - Summer Social at the Crooked Billet Kingswood. Martin G4XZJ. (0296) 81097.

Barnsley & DARC: Mondays, 7.15pm. Darton Hotel, Station Road, Darton, Barnsley. August 3 - On the Air Night, 10th - 2nd Open Talk on 1992 Rally, 30th - Moon Bounce by G6ZTU. Ernie G4LUE. (0226) 716339.

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. August 18 - Operating Evening and BBQ. Geoffrey Milne. 081-462 2689.

Bromsgrove & DARC: Fridays. Avoncroft Arts Centre, South Bromsgrove, Worcester. August 14 - Club BBQ at Wasely Hills Country Park. Joe Poole. (0562) 710010

Chelmsford ARS: 1st Tuesdays, 7.30pm. Marconi College, Arbour Lane, Chelmsford. Roy Martyr. Chelmsford 353221 ext 3815.

Chester & DRS: Upton Recreation Centre, Cheshire County Sports & Social Club, Plas Newton Lane, Chester. David Hicks. (0244) 336639.

Dacorum AR & TS: 1st (informal) & 3rd (formal) Tuesdays, 8pm. The Heath Park, Cotterells, Hemel Hempstead. Dennis Boast. (0442) 259620.

Derby & DARS. Wednesdays, 7.30pm. 119 Green Lane, Derby. August 5 - Rally Preparation at Littleover Community School, 26th - How Chips are Made by G3ZDM. Richard Buckby. Ambergate 852475.

Edgware & DRS: 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. August 13 - No Meeting, 27th - SSB Field Day Briefing. Hank Kay G0FAB. (081-205 1023).

Goole R & ES: Most Fridays, 7.30pm. West Park Pavillion, off Airmyn Road, Goole. Last Fridays. The Black Swan Inn, Asselby. August 7 - GOOLE 'On Air' Night, 14th - CW Instruction Evening, 21st - Summer Junk Sale, 28th - Social Evening at the Black Swan. Steve Price. (0405) 769130.

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. August 6 - Social Evening, 20th - Video & Friedrichshafen with G4UNL. Roy G4UNL. 081-804 5643.

Horndean & DARC: 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross, Horndean. August 6 - Packet Radio by Siskin Electronics. S.W. Swain. (0705) 472846).

Mansfield ARS: 1st Thursdays, 8pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. August 6 - Foxhunt followed by BBQ. Mary G0NZA. (0623) 755288.

Norfolk ARC: Wednesdays, 7.30pm. The Norfolk Dumpling, The Livestock Market, Harford, Norfolk. August 5 - HF SSB NFD/Town & Country Show Briefing, 12th - Real Radio Evening, 19th - Sea, Salt & Satellites by G3IOR, 26th - Science for All by G3PTB. Jack Simpson G3NJQ. (0603) 747992.

Oxford & DARS: 2nd & 4th Thursdays, 7.45pm. British Legion Club, Haddow Road, Crotch Crescent, Marston Road, Oxford. August 27 - Video Night. Terry Hastings. (0865) 863526.

Reading & DARC: 2nd & 4th Thursdays, 8pm. The Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Reading. August 13 - SWR by G3RZP, 27th - History of GB2SM by G3JUL. Nick Challacombe. (0734) 722489.

RSGB City of Bristol Group: last Mondays, 7pm. The Small Lecture Theatre, Queens Building, University of Bristol, University Walk, Bristol. August 24 - Video Evening, 30th - Picnic at Almondsbury Scout Camp. Dave Coxon G0GHM. (0275) 855123.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitchurch. August 5 - Top Band Working, 12th - DX Broadcast TV, 19th - Bring Your Morse Keys, 26th - Bristol Rally Planning. Len Baker. Whitchurch 832222.

Southgate ARC: 2nd & 4th Thursdays. Winchmore Hill Cricket Club Pavilion, Firs Lane, Winchmore Hill, London N21. August 13 - WAB Hunting by G8UKT, 27th - Club DF Equipment Check, 31st Bank Holiday DF Hunt & Barbecue in White Webbs Park. Brian Shelton G0MEE. 081-360 2453.

South Notts ARC: Fridays, 7pm. Highbank Community Centre or Fairham Community College, Farnborough Road, Clifton Estate, Nottingham. August 7 - Open Forum, 9th - 4th Foxhunt at 4pm, 14th - Designing & Constructing Repeaters by G0LCU, 16th - Treasure Hunt at 3pm, 21st - On Air, 28th - Weather Stations & Propagation by G4NPT, 30th - 5th Foxhunt at 4pm. Ray G7ENK. (0602) 841940.

Stratford upon Avon & DARS: 7.30pm. The Home Guard Club, Main Road, Tiddington, Stratford-upon-Avon. A. Beasley G0CXJ. 060-882 495.

Sudbury & DARC: 1st Tuesdays, 8pm. The Five Bells Inn, Great Cornard, Sudbury. August 4 - Bee Keeping by G4DHU. Colin Muddimer. (0787) 77004.

Three Counties RC: Alternate Wednesdays, 7.30pm. The Railway Hotel, Liphook, Hants. August 12 - Video Night, 26th - Junk Sale. Kevin G8GOS. (0420) 83091.

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. August 21 - Steam Nostalgia. Walt G3HTX. (0803) 526762.

West Kent ARS: 3rd Fridays, 8pm. The School Annex, Albion Road, Tunbridge Wells, Kent. John Taylor G3OHV. (0892) 664960.

Wirral ARS: 1st & 3rd Wednesdays, 7.45pm. Ivy Farm, Arrowe Park Road, Birkenhead, Wirral.August 12 - Committee Meeting, 19th - SSB Event Meeting.

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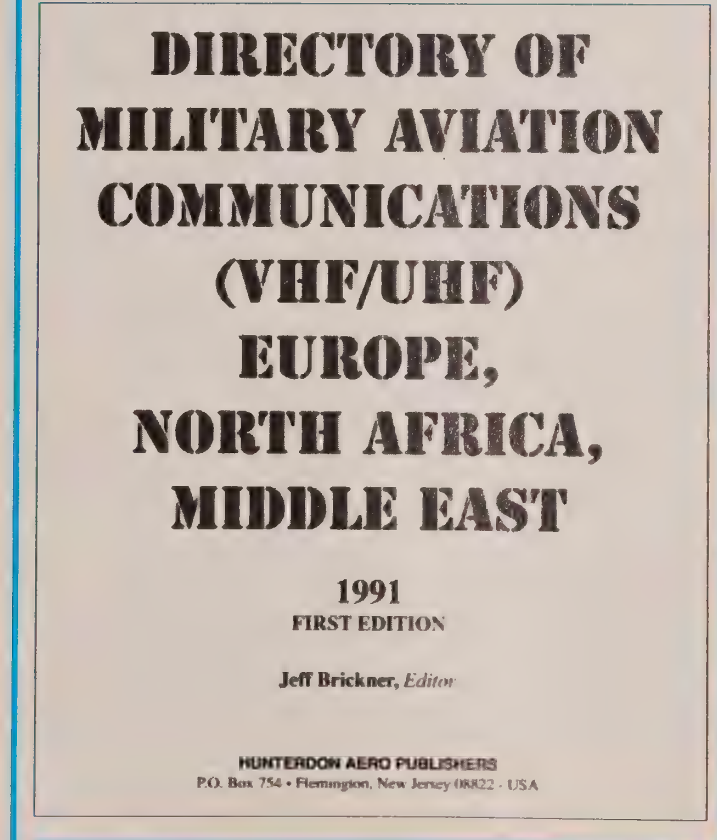

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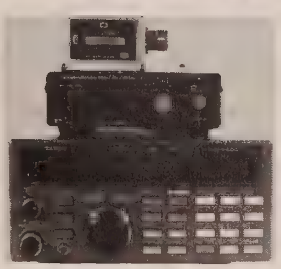

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The new NRD535 epitomises the very best in communications receiver design. This high technology product is based on the abundant technical experience gained by JRC in the professional communications receivers field. This means that the NRD535 is arguably one of the best receivers available to meet the discerning listeners needs. Brief specifications are as follows.
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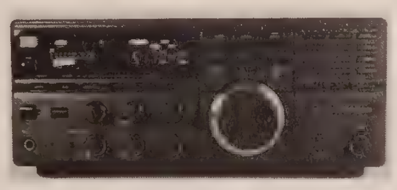
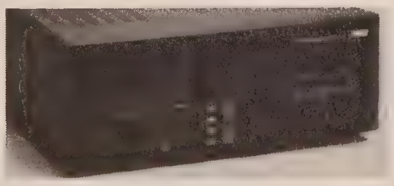


JRC NRD535

DRAKE R8E



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Now available from SMC the new DRAKE R8E communications receiver. These receivers utilise the very latest in technology to meet the demanding requirements of today's listeners. Conveniently located front panel controls allow for rapid operator programming and ease of use. The R8E receiver covers 0.15-30MHz and with the optional VHF converter will also cover 35-55MHz and 108-174MHz. The large clear LCD display gives the operator full information about the current receiver status.

SONY at SMC

SMC are pleased to be able to offer the SONY range of Multiband Receivers. They feature all the latest technology allowing unequelled coverage of both broadcast and shortwave bands, yet remaining both compact and easy to use. All the models illustrated cover VHF broadcast, SW broadcast, and some models cover other bands as well.
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SMC are pleased to be able to offer a large number of models from the very comprehensive AOR range which includes both hand portables and mobiles/base stations.

All the receivers are built to the highest possible specification yet remain very competitively priced. Often the leaders in the field, the AOR range is proving very popular amongst both professional and non professional users.
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◀ The Bearcat 200XLT is the cream of the Bearcat handheld scanner range. With 200 memory channels and simple operation these are proving very popular. Frequency coverage 66-88, 118-174, 406-512 and 806-956MHz.

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AOR – ALL IN ONE

The **AR1500** is the World's first true compact hand-held wide range receiver offering SSB as standard and has arrived in the UK. Coverage is from 500kHz all the way to 1300MHz without any gaps in the range. Channel steps are programmable in multiples of 5kHz and 12.5kHz up to 995kHz, the BFO will allow tuning between these steps for SSB operation. All popular modes are provided NFM, WFM, AM and SSB (USB, LSB and CW) with the BFO switched on.

The receiver is supplied with a comprehensive selection of accessories: DA900 wide band flexible aerial, NiCad pack, Dry battery case (for use with 4 x AAA alkaline cells), Charger, DC lead fitted with cigar lighter plug, Earphone, Soft case, Belt hook, 5 metres (approx.) of aerial wire terminated in a BNC connector for shortwave reception and Operating manual.

AOR AR 1500
WIDE RANGE MONITOR

Versatility is excellent. The AR1500 may be powered from it's internal NiCad pack, spare dry batteries may be carried for extended operation and used with the dry battery case, the set may also be plugged directly into the cigar lighter socket of a motor vehicle (external input range 11 - 18V DC).

Although offering a long list of facilities and operating modes, the receiver remains easy to operate. Many facilities have been carried across for the well proven AR2000 receiver. The AR1500 has a new `automatic memory' feature which automatically stores busy channels from search bank 9 into the 100 memory channels of scan bank 9.

There are 1000 memories in total arranged in 100 memories x 10 banks, there are also 10 additional programmable search banks. Each memory will store frequency and mode (NFM, WFM or AM - not SSB) the search banks will also store the step increment. There is a massive EEPROM memory store for all memories and search banks so that no backup battery is required. The memories may be over-written time and time again.

The display often provides `prompts' for selected operations such as a flashing "CH" to invite the user to key in a new memory channel number. All information such as frequency, mode (except SSB), channel etcetera is presented via an easy to see Liquid Crystal Display (LCD). The display is fitted with a switchable light to increase visibility in areas of low level lighting.

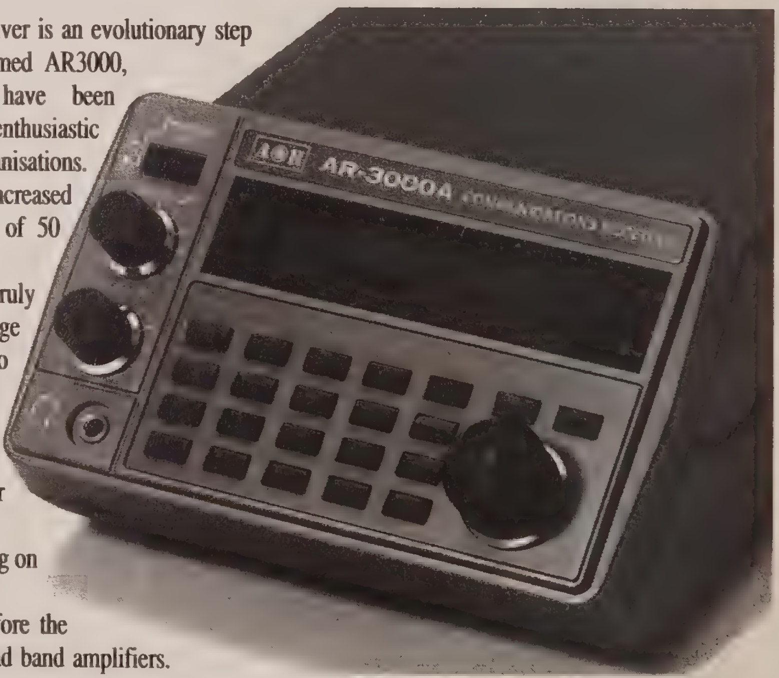
The AR1500 can meet a number of requirements to satisfy Airband or Marine enthusiasts, Professional off air monitoring and of course casual listening too. The World's shortwave and Amateur bands can be monitored, even the longer range Oceanic Airband and ship to shore. Of course the performance of this compact hand-held receiver can not be directly compared to that of the AR3000A or dedicated General Coverage Receiver.

Amazing value, all for an extremely attractive.

Recommended Retail Price of £279.00 including VAT.

The popular **AR2000** receiver continues. It has not been replaced by the new AR1500 receiver, the AR2000 remains a firm favourite with listeners and enthusiasts. Features include coverage from 500kHz - 1300MHz and reception of AM, NFM & WFM.

Recommended Retail Price £269.00 including VAT.



The **AR3000A** base/mobile receiver is an evolutionary step forward from the highly acclaimed AR3000, many major improvements have been implemented at the requests of enthusiastic listeners and commercial organisations. Search and scan speed has been increased to an unprecedented maximum of 50 increments per second.

Your listening horizons are truly extended with receive coverage from 100kHz all the way up to 2036MHz without any gaps in the range. The AR3000A offers the widest coverage on the market today with a high level of performance and versatility from long wave through shortwave, VHF and onward to the upper limits of UHF and SHF.

Not only will the AR3000A cover this extremely wide range it will allow listening on any mode: NFM, WFM, AM, USB, LSB AND CW.

The high level of performance is achieved by using 15 band pass filters before the GaAsFET RF amplifiers unlike other receivers which may rely largely on broad band amplifiers.

This ensures high sensitivity through the entire coverage with outstanding dynamic range and freedom form intermodulation effects.

An RS232 port is provided enabling full remote control via most computers. A rear panel switch changes control between the keypad and RS232 port. Two commercial IBM compatible software packages are available... ACEPAC3A & AOR Spectrum Coordinator.

The AR3000A is powered from 13.8V DC, a suitable mains power supply is provided with the receiver. Other accessories include a telescopic whip, DC lead and comprehensive operating manual.

Recommended Retail Price £765.00 including VAT.

If you are unable to obtain supplies of AOR products from your local dealer, you may order driectly – we have a fast mail order service.

Please send a large S.S.A.E. (34p) for further details.

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E&OE

NOAA Satellite Predictor Program Version 2.0

The original version of this simple but effective and accurate software for the BBC-B is easily adapted for other computers and has proved very popular if correspondence is anything to go by. Version 2.0, from Peter Rouse GU1DKD, offers a tidier display and shows the day alongside the date.

It seems I am not alone in usually knowing what day of the week it is but sometimes having difficulty remembering the date. The changes have been achieved by adding just 17 lines. However, this simplicity relies on the fact that new predictor charts are always based on a Friday start day. That is not as odd as it may sound because the figures that you need for the prediction are updated each Friday evening on the recorded telephone service from Lasham (the number is included in the program).

Before going any further I must make a comment about the problems that some readers had with the original program. There was absolutely nothing wrong with the listing but with hindsight it was perhaps not a good idea to use "I" as the variable for "increment". In every case where people contacted us with a problem they had misread "1" for "I". So if you are starting the program from scratch watch out on lines 200, 290, 360, 420 and 480. I have deliberately not changed the variable assignment because anyone who has the original will not need to re-enter the entire program.

This is what you should do if you are already using the program, change lines 380, 410 and 480 to match those in the new listing. Add lines 135, 471-478 and 610-670. If you do not wish to calculate the darkness hours passes then add the following line:

425 IF H<6 OR H>19 THEN GOTO 410

The digits '6' and '19' can be adjusted to suite seasonal variations of daylight hours.

What it all Does

For any reader who did not see the original program I will briefly recap on what it does. If you feed in the NOAA satellite data the program will print out a list of times for valid passes for the British Isles. The data is entered in the same sequence that it is supplied on the Lasham recording which is available after 6pm each evening (do not ring the number during business hours). The times given by the program will be for equator crossing (EXP) and so you will need add the appropriate number of minutes (at my own location around 33 for a Southbound pass and about 8 for a Northbound). The program cannot predict when you will acquire the signal as obviously this will depend on your antenna, receiver and location and even the equator crossing point for that pass. However, after the first few orbits you will get to know roughly how many minutes to add.

The program can easily be modified for other computers. It is written in Microsoft Basic and the only lines peculiar to the BBC are the VDU statements in lines 510 and 530 which are the printer off/on commands. Overseas readers should note that they'll need to change lines 430 and 440 to match their own location.

```
 10 REM NOAA PREDICTOR BY PETER ROUSE (GU1DKD)
 20 REM OFFERED AS PUBLIC DOMAIN SOFTWARE FOR THE BBC-B
 30 VDU 3
 40 CLS
 50 PRINT:PRINT
 60 PRINT “NOAA SATELLITE EQUATOR CROSSING TIME PREDICTOR”
 70 PRINT”INPUT IN SEQUENCE SUPPLIED BY U.K. WEATHERWATCH”
 80 PRINT”RECORDED DATA ON 025-683-448 AFTER 1800 HOURS”
 90 PRINT:PRINT
100 INPUT”WHICH SATELLITE NUMBER”,S:PRINT
120 INPUT”WHICH MONTH (NUMERICAL)”,M:PRINT
130 INPUT”WHICH START DAY”,Y:PRINT
135 J=1
140 INPUT”WHAT IS THE STOP DAY”,T:PRINT
150 INPUT”EQUATOR CROSSING TIME (HOURS)”,H:PRINT
160 INPUT”EQUATOR CROSSING TIME (MINUTES)”,K:PRINT
170 INPUT”EQUATOR CROSSING TIME (SECONDS)”,V:PRINT
180 INPUT”EQUATOR CROSSING POINT (DEGREES)”,X:PRINT
190 INPUT “WHAT IS THE NODAL PERIOD”,N:PRINT
200 INPUT”INCREMENT (IN DEGREES)”,I:PRINT
210 REM DATA CHECK SEQUENCE
220 PRINT”THE SATELLITE IS NOAA”;S
230 PRINT”START DATE IS “;Y”;”/”;M;”/”;”1992"
240 THE STOP DATE IS “;T;”/”;M;”/”;”1992"
250 PRINT”THE EQUATOR CROSSING TIME IS “;H;” HOURS “;K;”
         MINUTES “;V;” SECONDS”
260 K=K+(V/60)
270 PRINT”THE EQUATOR CROSSING POINT IS “;X;” DEGREES”
280 PRINT”THE NODAL PERIOD IS “;N;”  MINUTES”
290 PRINT”THE INCREMENT IS “;I;”  DEGREES”
300 INPUT”IS THIS CORRECT (Y/N)”;B$
310 IFB$=”N”THEN GOTO 40
320 INPUT”PRINTER (P) OR SCREEN (S) ;R$
330 IFR$=”P” THEN GOSUB 530
340 REM CALCULATION
350 PRINT:PRINT:PRINT
360 PRINT TAB(8)”NOAA”;S;    NODAL PERIOD  “;N;”  MINS
         “;”INCREMENT  “;I;”  DEGREES”
370 PRINT
380 PRINT”DAY   D/M      EXP      H:M”:PRINT
390 N=N/60
400 H=(K/60)+H
410 H=H+N:IFH>24THENH=H-24:Y=Y+1:J=J+l
420 X=X+I:IFX>360THEN X=X-360
430 IF X<200 AND X>170 THEN GOTO 460
440 IF X<360 AND X>330 THEN GOTO 460
44S IF X<3 AND X>O THEN GOTO 460
450 GOTO 410
460 K=(H-INT(H))*60
470 IF Y=T+1 THEN GOTO 500
471 IFJ=8 THEN J=1
472 IF J=1 THEN GOSUB 610
473 IF J=2 THEN GOSUB 620
474 IF J=3 THEN GOSUB 630
475 IF J=4 THEN GOSUB 640
476 IF J=5 THEN GOSUB 650
477 IF J=6 THEN GOSUB 660
478 IF J=7 THEN GOSUB 670
480 PRINT J$;”   “;Y;”/”;M;”  “;TAB(12)  INT(X);”  “;TAB(18)
         INT(H);TAB(20)”: “;INT(K)
490 GOTO 410
500 PRINT:PRINT TAB(8)”AM PASSES ARE SOUTHBOUND - PM
         PASSES ARE NORTHBOUND.”
510 VDU 3
520 INPUT”PRESS ‘RETURN’ TO RE-CYCLE”,Z:GOTO 40
530 VDU 2:GOTO350
610 J$=”FRI”:RETURN
620 J$=”SAT”:RETURN
630 J$=”SUN”:RETURN
640 J$=”MON”:RETURN
650 J$=”TUE”:RETURN
660 J$=”WED”:RETURN
670 J$=”THU”:RETURN
```

Have you a Cormorant's Paper Bag?

The common cormorant or shag
Lays eggs inside a paper bag.
The reason you will see, no doubt,
It is to keep the lightning out.
Anon

This anonymous poem has stuck in the mind of P E W Alleyley GW3KJW for many years and in this short article he recalls the day that the paper bag failed.

Sunday 23 September 1990 was a mixed day on the Lleyn Peninsula, dark clouds and heavy rain in the morning, low pressure, a distant flash of lightning out to sea about 1.45pm - then the weather cleared. The afternoon was fine, warm and sunny, and after taking a gentle stroll with my wife, I returned home and wound my antenna up to full height, which in my case is 12m above ground, ground being 213m above sea level. The 144MHz band was quiet and the usual beacons were not very strong.

At 6pm I switched off all the equipment, although I left everything plugged into the wall sockets, and left the antenna feeder connected to the transceiver. The evening brought a very clear sky with just the odd heavy cloud in the distance.

In my village most people retire early to bed. It is a farming community, we have no pubs (we are the only 'dry Sunday' district in the UK), there are no main roads, and consequently out of the holiday season it is extremely quiet. But at 9.30pm the village was stirred by a sudden violent rainstorm, the raindrops sounding as loud as hail as they fell. At the peak of the rain's intensity there was an almighty flash of blue light, followed immediately by a complete power failure and the sound of a nearby explosion. When the initial shock to our nervous systems subsided, it became fairly obvious that either World War III had commenced or that a lightning strike had occurred somewhere close by.

Candles

After groping around for the stock of candles, we, that is the family and myself, began to take stock of the house and surroundings. There was no electrical power whatsoever, the whole village was in darkness except for the glowing, disintegrating porcelain insulator on a nearby 11kV power line. I went outside, it had now stopped raining, to examine my antenna and mast. To my amazement it was still there apparently undamaged. Not wishing to tempt fate I quickly winched it down to half height. The sky was completely clear, the stars were shining brilliantly and with the four street lamps of the village not working I had the marvellous view of meteors flash from east to west.

Enough of nature, it was time to telephone the electricity board - MANWEB in our district, but the telephone refused to co-operate - it was totally dead. It was fortunate that the house was not on fire nor anyone injured.

In our village power cuts and failures are common events, at the slightest breath of wind the power lines fall down, it was time to go the bed and view the problem the following morning.

Monday dawned bright and sunny but without electricity. My house is electrically dependent, gas has not reached us and will not this century. No sign of any employees from the electricity board nor British Telecom, although I had been told that MANWEB had been inspecting the power lines during the night.

Power Restored

A glance skywards towards the plethora of wires snaking between the houses and over the fields showed that the air break switches were open on the nearby 11kV line above the transformer feeding power up my lane to the respective houses. This transformer is suspended on two poles some 6m above the side of the lane and 10m from the nearest house. A ceramic insulator holding the earth shorting lines on the top of the next 11kV pole was missing, this is situated in the garden of the same house.

Nothing we could do but to go shopping, it was warmer in the car than in the house - the central heating system won't work without electricity. Returning home at 1pm, I was delighted to see BT in force blocking the lane by our little telephone exchange. To my further delight, the power supply was restored, it was time to test the circuits. This revealed some interesting but frightening findings - the 5A fuse in the main fuse box protecting the ground floor lighting had blown, but when replaced the lights were working, and indeed no other fuses in the box had blown.

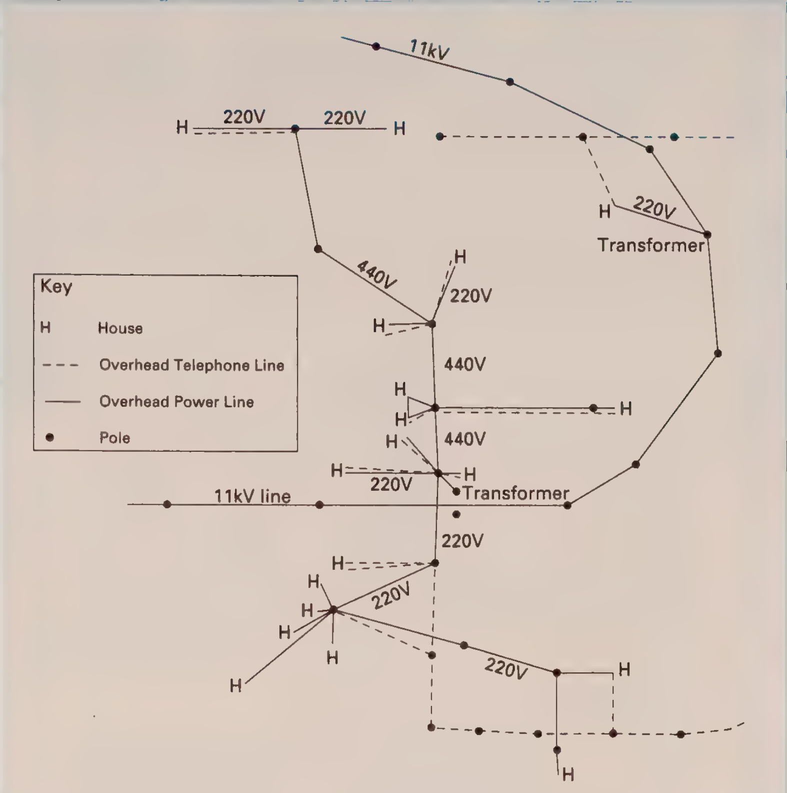
The central heating failed to function. This is separately fused with a 5A fuse protecting the burner and another 5A fuse protecting the water pump and the microprocessor switching system. The latter fuse had blown to such an extent that it had shattered into minute fragments making it almost impossible to remove from its holder. When it was finally replaced the system did not operate - the clever electronics had failed, due, no doubt, to a spike which had destroyed the microprocessor.

Next, the telephone. The wall mounting jack unit seemed to have borne the brunt of the damage, the jack plug had been thrown out, the pins blackened and the circuit inside the box ruined. BT repaired, or rather replaced, it the following day and also gave me a new telephone as the original one had become very noisy.

Testing Times!

Now the task I dreaded doing - testing my radio equipment and computer. Everything had been left connected to the mains, but switched off. To my great surprise and joy it all worked, with the exception of a low current 12V power supply. I found that a 3A line fuse in the power unit had blown even though a similarly rated fuse in the mains plug had remained intact.

I consider the survival of



The layout of telephone wires and power lines around GW3KJW's QTH.

my radio equipment to be due to the fact that it is comparatively old, does not contain any i.c.s or processors and has a genuine mechanically tuned v.f.o. - no digital readout when I bought my TS-700G some 18 years ago.

By now the villagers, being a close knit community, were visiting each others' houses, finding out if the elderly residents were coping well and generally exchanging information of our respective damage. I found that most of the houses had suffered some damage to their various electrical and electronic devices. Only two houses in the lane had escaped without anything amiss, both being empty at the time and no current being drawn through any appliance. Over twenty telephones were replaced in the next two days.

I must point out that in our isolated part of the world, a place renowned and designated as an area of outstanding natural beauty, the electricity board and BT delight in maintaining out-of-date, above ground, network of wiring which is continually failing due to the often severe weather we receive, especially during the winter months. You will see from the drawing that we are criss-crossed by a cat's cradle of wires, 11kV lines transformed down to 440V and thence to 230V to feed the respective houses. The domestic electricity is connected overhead to the houses via slack, fraying and ionised copper wires to ancient brown pot insulators on the house walls or chimnies.

The telephone lines, which up to a few years ago, were above ground in our lane, are now trunked for a short distance beneath the road - but are fed up the same poles that carry the power lines, and then overhead to our houses, to run parallel to the power lines and connected also at roof level.

It would seem that a single burst of lightning struck the 11kV line causing a massive spike or surge to travel along the line defeating the breakers and earth returns, transferring or induced into the lower voltage lines and into the telephone lines and thence into the houses.

Damage

The damage caused had been varied and inconsistent. Some houses had their electric light bulbs burn out, later examination of these bulbs showed that the glass bead holding the resistance wire had shattered although the bulb remained intact. A number of the clever television sets had failed, the cheaper and less sophisticated ones were still working. The only person with Astra satellite TV found that his converter had packed in but that the TV was still operable. The little telephone exchange was partly out of action for a day, and its emergency generator kept running even after the mains power was restored, its micro-processed little brain had died.

The householder on one side of me lost one of this two telephones, the clever sophisticated memory one that cost eight times as much as the cheap and cheerful one that was still working. The 15A fuse protecting his garage wiring blew, he showed me his battery charger that had been running at the time of the strike, its meter was jammed hard over showing that the battery had received a charge greater than expected. The fuse had not protected the system, yet had been the fuse approved by the electricity board when the house had been re-wired.

The house on the other side of mine was totally untouched, the resident was away at the time and no current was being drawn.

At one house, close to the 11kV line, a hole was blasted in the floor directly beneath their telephone, at the same instant they lost their television set and video, and of course, the telephone.

It is apparent that nothing can be done to protect your property totally from a near lightning strike, but I wonder if the presence of so much copper wire in the air and a forest of high poles makes the vicinity more likely to attract lightning and more likely to disperse the force over a greater area thereby increasing the effect.

The highest structure in the village, my antenna system, was untouched. It is at the rear of my property whilst all the power and telephone wiring is at the front of the house. I will be winding it down a lot more in future but frankly I do not think in reality I can say that it is totally safe from a strike.

Thunderbolt

Subsequently, during the 1990 Christmas holiday, a report appeared in the local and national news of a house being struck by a 'thunderbolt'. This house, 32km away from me, had its roof blasted away and the contents of the house destroyed. The occupier stated that a 'thunderbolt' had travelled down his chimney and entered the house. I studied the photographs of this house and noted that the power feed to the house was by overhead lines to the same chimney. I wonder if in fact the house was struck, or if the power lines were struck and a massive surge travelled along them into the house. I feel that there may be many more incidents similar to this.

Incidentally during the storm of 5 January 1991, a number of the power lines in my village were actually snapped apart by the force of the wind.

Praise

Although I object strenuously (in common with other residents) to the policy of carrying the power and telephone lines above ground, and on the same poles, I have nothing but praise for the maintenance engineers who regularly turn out in all weathers to repair their respective wiring.

NEVADA EVERYT

YUPITERU

MVT 7000 HANDHELD

PROBABLY THE UK'S MOST POPULAR HANDHELD SCANNER!

- ★ Receives 8 to 1300 MHz 100kHz-1300MHz (at reduced sensitivity)
- ★ 200 Memory channels
- ★ Rotary or keypad freq. control
- ★ AM/FM/NFM
- ★ Large display with signal strength .....me

EACH SET IS SUPPLIED COMPLETE WITH:- Full set of high power NiCads, AC charger, DC power lead and carry strap.......... **£289**

MVT 8000 MOBILE/BASE

This new model is the mobile version of the popular MVT 7000 Handheld above.

- ★ Receives 8 to 1300MHz, 100kHz to 1300MHz (at reduced sensitivity)

THIS RADIO IS ESPECIALLY SENSITIVE AT UHF FREQS. Set is supplied with mains power unit. **£299**

MVT 6000 MOBILE/BASE

An economy version of the new MVT 8000 above -housed in the same case.

- ★ Receives 25-550MHz, 800-1300MHz
- ★ 100 Memory channels

SPECIAL PRICE............................ **£199**

AIRBAND RADIOS

This month we are pleased to introduce **THE WORLDS FIRST DEDICATED CIVIL/MILITARY AIRBAND RECEIVER, THE VT225.**

A powerful pocket scanner that leaves the competition standing. - A super sensitive set designed for optimum performance on the Civil/MilitaryAirbands.

- ★ Receives 108-142 MHz Civil Airband 222-391MHz Military Airband 149.5-160MHz Marine Band
- ★ 100 Memory channels
- ★ AM/FM on VHF
- ★ Priority channel function

EACH SET IS SUPPLIED COMPLETE WITH:- NiCads, earphone, carrying strap and mains charger.......................... **£229**

VT-125 UK CIVIL AIRBAND RECEIVER

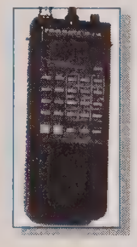
Using the same technology as the VT-225, this set covers the full Civil Airband - hearing distant signals that are inaudible on some other scanners.

- ★ Covers 108-142MHz
- ★ 30 Direct entry memories
- ★ Search steps 25, 50, 100kHz SUPPLIED COMPLETE WITH NICADS AND UK CHARGER...................................... **£149**

FAIRMATE

HP2000

STILL ONE OF THE MOST POPULAR HANDHELD SCANNERS ON THE MARKET. Over the last year the HP2000 has outsold almost all other models.



- ★ Continuous coverage from 500kHz to 1300MHz
- ★ 1000 channels of memory
- ★ Keypad or rotary control
- ★ AM, FM and WIDE FM modes
- ★ Search steps from 5 to 995kHz

EVERY SET COMES COMPLETE WITH:- Full set of high power NiCads, 2 antennas, carrying case, earphone, DC cable, belt clip and strap, UK charger **£269**

MS1000 BASE/MOBILE SCANNER

MOBILE VERSION OF THE HP2000 HANDHELD BUT WITH SEVERAL ADDITIONS:-

- ★ Switchable audio squelch
- ★ Tape recorder output socket
- ★ Automatic - signal operated tape recorder switching
- ★ All metal case for improved EMC compatibility
- ★ Receives:- 500kHz - 600MHz, 805 - 1300MHz. Supplied with mains power supply. **£279**

AOR SCANNERS

AR1500 HANDHELD

Covers 500kHz to 1300MHz receiving NFM, WFM, AM, and SSB. Supplied with a large selection of accessories including:-

- ★ Charger
- ★ Dry cell battery case
- ★ 5 mtr LW antenna
- ★ Ear piece
- ★ Soft case

NOW IN STOCK......................... **£279**

AR2002 BASE/MOBILE

Receives 25 - 550MHz, 800 - 1300MHz, AM, FM, WFM Super-sensitive receiver... **£399**

AR2500 BASE/MOBILE

Receives 5-550MHz, 800-1300MHz AM, NBFM, WFM.1984 Memory Channels, Fast 36 CH/SEC Scan. Resolves SSB with BFO control **£399**

AR2800

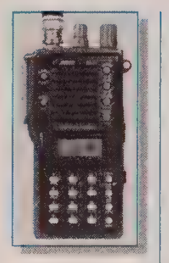
- ★ Receives 500kHz - 600MHz, 800 - 1300MHz AM, FM, WFM. SSB capability with BFO.
- ★ 1000 Memory.......................... **£395**

WHY NEVADA?

Because we offer what we know to be the best un-biased advice on all of the products we keep! Both John and Paul have tried them all and can offer independent, and above-all *honest!*, advice on all the range.
Backed up by a full technical service department and an excellent *next day* delivery service, what more could you want - call *now* or pop in for a friendly chat!

SCANNERS

ALINCO DJ-X1



HANDHELD SCANNER

- ★ Covers 500kHz to 130MHz
- ★ 100 Memories
- ★ AM/FM/WFM
- ★ 3 Scanning speeds

PLEASE NOTE:-
ALINCO DO NOT INCLUDE BATTERIES AND CHARGER AT THIS PRICE. **£249**

PRESIDENT SCANNING RECEIVERS

As main UK distributors, we carry all of their range including these *new* models:-

BEARCAT 50XLT

Popular beginners model!

- ★ 10 channel programmable
- ★ 66-88, 136-174, 406-512, MHz
- ★ Ni-Cad or dry battery powered
- ★ Ideal marine monitoring **£99**

BEARCAT 100XLT

Modelled on the ever-popular 200XLT but with only 100 channel memory capability and top frequency of 512MHz **£179**

All President range backed up by full in-house servicing facilities.

BEARCAT 200XLT

200XLT HANDHELD SCANNER

Still one of the easiest to use, and the most reliable scanners on the market, easy to program, sensitive receiver.

- ★ 200 memories
- ★ 66-88, 118-174, 406-512, 806-956MHz
- ★ UK charger/nicad pack supplied...................................... **£229**

BEARCAT 760XLT

A mobile/desktop version of the 200XLT above but with 100 memories. Supplied complete with mains adapter

SPECIAL PRICE............................. **£199**

SONY

As a Sony Shortwave Centre we stock the complete range of Sony Shortwave products - here is a selection of the popular models.

ICF2001D

A full coverage shortwave, VHF, and airband radio (150kHz to 136MHz). Receives AM,FM, and SSB **£299**

SW77

One of the new additions to the Sony range,the SW77 covers 150kHz to 30MHz plus76-108MHz. With a rotary tuning dial,125 scan memories, reception of AM, FM, USB, LSB, CW, tape record facility, this is a superb all rounder.. **£349**

SW1E

Pocket shortwave plus VHF radio supplied with headphones, case and shortwave guide. This model won't hurt your pocket.! **£149**

SW7600

One of Sony's most popular VHF and Shortwave radios, 76-108MHz FM,150kHz - 30MHz Shortwave receives AM, FM, SSB......Well Rated.!............ **£149**

AIR 7

Very popular, sensitive Airband handheld radio - lovely audio quality & large easy to use key board **£229**

NEW PORTABLE SONY SW55 MULTIBAND RADIO

Technically the best that Sony have come up with yet! Stable enough for FAX, yet easy enough to tune on SSB.

A dual-conversion receiver with excellent results, the SW55 is a real winner.

- ★ 150kHz-30MHz, 76-108MHz, all mode inc. *SSB*
- ★ 125 multi-function memories inc. world time clock/alarm
- ★ 4-way digital tuning inc. scan/manual/direct access

How do they get it all in? –
Call now or come and see for yourself! . **£249**

AN1

An external active antenna with built-in pre-amp, covers 150kHz - 30MHz. Fully portable with easy to mount fixing brackets...................................... **£57.95**

AN3

Active antenna for Aircraft and VHF reception, suitable for Sony Air 7 and others. **£54**

AR3000A NEW MULTIMODE SCANNER £765

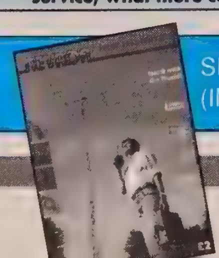
AOR's top of the range model now improved.

- ★ Receives 100kHz - 2036MHz. Modes:- USB, LSB, CW, AM, FM, WFM.
- ★ Computer control is also available via the RS232 socket, "Computer control using Acepac 3 software now available, for use with IBM PCs and clones". **£119**

INTRODUCTORY OFFER

SUPPLIED WITH FREE WIDEBAND DISCONE WORTH £49.95

Note: This is a UK version from AOR and not a foreign grey import.



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Access

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SCANNER ACCESSORIES

LOW NOISE PRE-AMPLIFIERS

These new pre-amplifiers are a must for the scanner enthusiast and will allow reception of signals that were inaudible without them.

MODEL M75

For base and handheld scanners

- ★ 25-2100MHz
- ★ Low noise GaAs FET
- ★ Selectable filters for optimum performance
- ★ Variable gain/attenuation control....................................**£69.95**

MODEL M100

Same specification as the M75 above but with full RF switching. May be used with transceivers of up to 5 watts RF output Ideal for the latest TwinBanders **£79.95**

TWO-WAY REMOTE MASTHEAD SWITCH

Uses one coax feeder to the masthead and remotely switches between 2 antennas with this unit. Very low loss up to1.3GHz. Uses Greenpar N type connectors **£44.95**

JIM PSU101 MK IV

A combined desk stand and power supply/charger for handheld scanners. Suitable for most popular models. Special versions now available please call for more details.............**£29.50**

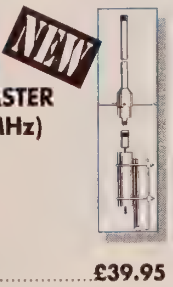
JIM BHA3

Desktop stand for handheld scanners...................**£9.95**

JIM CH-A4

Mobile holder for use with handheld scanners in the car **£6.95**

SCANNING ANTENNAS



NEVADA SCANMASTER (500 kHz - 1500MHz)

New high quality wide band receiving antenna uses fibre glass/stainless steel, with 4 small radials. 'N' type connector. Length 1.1 metres **£39.95**

WB1300 DISCONE (25-1300MHz)

Stainless steel top of the range 'N' type connector. Complete with short mounting pole and clamps "8 elements with vertical whip" – complete with short mounting pole and clamps etc etc. Best value at **£49.00**

MICRO-SCAN (180-1300MHz)

New low cost ground plane antenna.......................................**£12.00**

SKYBAND (25-1300MHz)

Stainless steel economy wideband Discone recommended – bargain price only....... ....**£24.00**

LOG PERIODIC BEAM (105 - 1300MHz)

20-element wideband beam - can be used for transmit on VHF/UHF amateur bands. 12dB fwd. gain..................................**£135.00**

DIAMOND D707 (500kHz - 1500MHz)

A base antenna with 20dB pre-amp 3.5ft long fibreglass with mounting kit. Requires 12V DC supply. **£99.00**

DIAMOND D505 (500kHz - 1500MHz)

Mobile version of the D707 superb antenna..**£69.00**

TELESCOPIC SCANNER ANTENNA

(BNC)........ ....**£5.75**

RUBBER DUCK SCANNER ANTENNA

VHF/UHF (BNC) **£11.95**

ICOM

ICOM We carry a varied selection of the Icom range of Amateur radio products including all of their latest models. However should you want something which is not in stock PAUL can get most things within 24 hours! (subject to availability). Icom have been known over the years for their Quality and Performance, here is just a small selection of their vast range!

IC R7100

Covers 25 - 2000MHz. Includes 900 memory channels with all mode capability. Five different scan options and an automatic record facility, what more you ask? Full brochure available. Special offer **£999**

IC R72

Covers 100kHz to 30MHz on the HF Bands and offers all mode reception (FM, with the optional board) Easy to use and idealy suited to the new comer. A full 99 memory channels with scan facility and a 10dB pre-amp fitted as standard **£589**

IC R1

Icom's most popular pocket-sized wideband scanner Frequency from 150kHz to 1300MHz with 100 programmable memories. AM, FM and WFM Modes. Sleep timer and clock facility Optional NiCads, carry cases, and fast chargers are available.
NEW LOW PRICE **£329**

IC R100

Mobile or base extra wideband scanning receiver covering 500kHz to 1.8GHz with 100 memory channels and receives AM, FM & WFM Modes...**£475**

PHILLIPS D1875

Shortwave receiver covering all the major shortwave broadcast bands
SPECIAL PRICE **£49.95**

KENWOOD

R2000 RECEIVER

A good 'Middle of The Road' Receiver giving general coverage receive from 150kHz to 30MHz. Built in clock and timer facility. Ten user programmable memories Optional VHF Converter (Secondhand models usually available) **£499**

R5000 RECEIVER

Based on the receive section of the TS440S HF Transceiver both in looks and design this model covers 100kHz to 30MHz all mode, 100 memories and facility for optional filtering. **RECOMMENDED**............**£ CALL**

SHORTWAVE RECEIVERS

LOWE HF-225

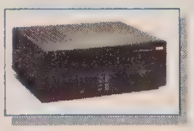
Receiver (30kHz - 30MHz) Optional extras inc FM/AM detector, Ni-cads, Speaker, Case & Active Ant. Long standing favourite. Quality filtering included. **£439.00**

LOWE HF-150

Receiver Economy model but with an excellent set of ' **EARS'**. LCD display. Portable or Mains Power **£329.00**

NRD-535

Japanese top of the range general coverage receiver, 0.1 - 30MHz Lots of Options available.....................................**£1115**



DRAKE R8E

Don't let its looks fool you – this is a top-class receiver direct from the States and a company known for its quality and reliability. 100Kcs-30MHz supplied as standard (no hidden extras) with all filters and syncronas detector.

Recent reviews agree – the performance of the R8E is second to none and still under £1000.00! Only..............................**£965**

DRAKE R8 VHF CONVERTER

In-board convertor giving: 35-55MHz and 108-174MHz.......................................**£195**

DRAKE MS8 MATCHING EXTERNAL SPEAKER

Improves audio reproduction............**£49.95**

DRAKE COMPUTER CONTROL

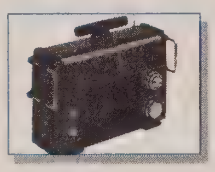
Drake software now in stock (for IBM PCs and clones)...**£59.95**

*For those of a technical nature, a full technical manual is now available **£29.95**

SANGEAN ATS803A

Full short wave coverage portable receiver with FM stereo. 14 memory channels, 12 shortwave broadcast bands...........**£109.95**

STEEPLETONE MRB7



Multi-band Radio. This radio will appeal to both Aircraft Enthusiasts and the Marine Monitors. The multi-band 'jumbo' radio has almost everything you need to monitor these bands. LW, MW, & SW plus the Marine and Aircraft Bands... Good Starter! **£69.95**

TRADING POST

We buy as well as sell new & used radio equipment, please feel free to call Paul or John for instant quotes on P/X's and Buy-in's

Yaesu FR101 Receiver c/w Ext.Spkr Ham Bands only.Ex.Cond....................................**£275.00**

Marc2 'Hipster' Receiver150kHz-520MHz all-mode Boxed V.G.C..............................**£199.00**

Trio R1000 S/W Receiver. Digital Display with timer V. Clean....................................**£350.00**

Trio R2000 Rx. Good middle of the road receiver.Avg. Cond. **£450.00**

Icom R72 Gen. Cov. RX almost new still U/Gtee. Bargain. **£500.00**

Yaesu FRG7 Good old FaithfulReceiver.....Still Going! **£175.00**

Realistic Pro37 200 Channel H/Held Scanner.As new.............................. **£175.00**

Sony Air7 Handheld Airband Receiver. offers around. **£185.00**

Nevada MS1000 Base/Mobile Scanner. Exc. Cond. G/Tee......................................**£215.00**

Regency 7000 Base/Mobile Scanner. V. Sensitive Radio................................. **£215.00**

Fairmate HP2000 'The ultimate' in handheld scanners full 1000 memories. v.g.c. but tatty box **£215.00**

AOR AR3000A The best base station scanner money can buy All mode 150kHz - 2.1GHz Ex-demo model **£699.00**

Yupiteru MVT-7000 c/w PSU101 supply/stand. **Avg.cond** G/teed fully tested model **£220.00**

Alinco DJ X1 The latest model in excellent condition with box and all manuals incl. Frequency book. G/teed **£225.00**

Bearcat 200XLT. Old favourite easy to use with 900MHz and nicad **£140.00**

Replacement Nicad Pack – for the Bearcat 200XLT + Bearcat 100XLT........................**£29.95**

Signal R535 airband receiver – known to be good **£175**

VT-125 II pocket airband scanner 30 memories and search **£95.00**

Sony Pro80 handheld receiver c/w UHF Conv. Gtee **£199**

THIS MONTH'S SPECIAL P/X DEAL

Get the very latest in handheld scanning receivers – the AR1500, by part exchanging any of the following:-

Fairmate HP100, HP200 & HP2000,
AOR 1000, 2000, 850 & 900s
Yupiteru MVT5000, 6000 & VT125s
Bearcat 200XLT, 100XLT, 100XL, 50/55XLTs & 70XLTs

Call us now – even if we haven't listed your radio, for what we know to be unbeatable P/X deals.

BOOKS...BOOKS...BOOKS...BOOKS

Shortwave Confidential Frequency List.
Lists 0-30MHz Freqs. **£8.95**
VHF/UHF Frequency Guide A real must for serious users ...**£5.95**
Marine Frequency Guide Near the coast? Ideal book **£4.95**
VHF/UHF Airband Guide At last, now back in print...........**£6.95**
Scanners 2 by Peter Rouse,Both books full of good info..........**£8.95**
Scanners 3rd Edition **£10.95**
Short Wave Communications.
Renowned contributor to the popular Short Wave Magazine **£8.95**
Air Traffic Radio 1991 (updated for '92).........................**£3.95**
Sounds Easy Guide to Britain's Radio Stations........ ....**£2.95**
Flight Routings Guide Book (1992 version)...... ....**£4.95**
UK Scanning Directory
Everything you wanted to know but were afraid to ask **£14.95**

Directory of Military Aviation Communications.

Space Shuttle operations, War games, in-flight refuelings, interception of Soviet **BEAR** Recon-Bombers, Military Airshows, secret coded transmissions, these are only a taste of what's in store in this publication. Frequency, Locations & some maps for Europe & North Africa are included for reference **£17.95**

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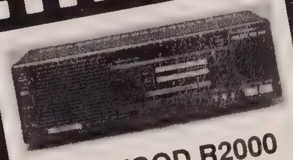
KW Communications is back in business! After a brief "rest" and under new ownership and management that understands the needs of the listener, KW will be offering the shortwave listener and scanning enthusiast a wider range of equipment and accessories, carefully hand picked to ensure quality and value for money. Whatever your interests are, be it chasing tropical DX on the shortwave broadcast bands or checking the progress of Concorde over the Atlantic, we have the receiver for you – from the fabulous new Lowe HF150 to the truly superb JRC NRD-535. We also stock an enormous range of scanning receivers for monitoring air band, marine, amateur radio and other local VHF and UHF frequencies. We've got hand held, mobile and base station scanners from Signal's R537S airband receiver to the sophisticated Icom R7100. We stock a wide range of accessories including antennas, preamps, books and frequency guides and of course our experience to help you get the best from your equipment. Call in and see the widest range of equipment in the largest shortwave centre in the south east.

JRC NRD535
£1099

LOWE HF150
£329


KENWOOD R2000
£549

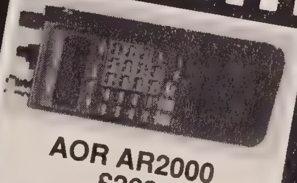
ICOM R72E
£659

ICOM R7100E
£1120

DON'T FORGET

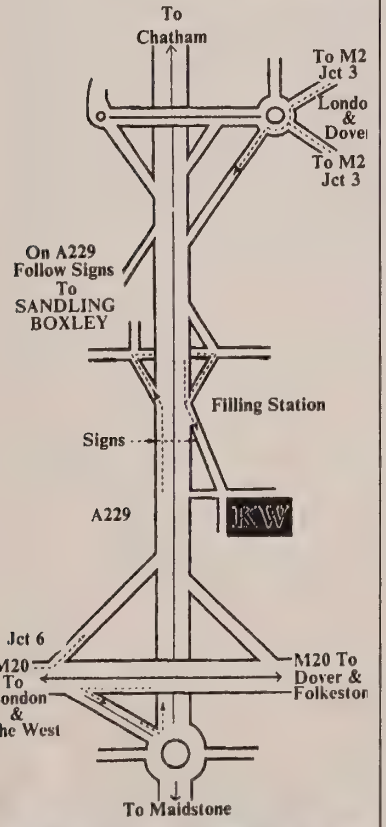
We also have a range of pre used equipment – all fully warranted – and we'll be happy to take your receiver or scanner in part exchange. Simple, speedy mail order – ring for details

AOR AR3000A
£765


AOR AR2000
£269

ICOM R100
£510

HF225
£429



OPENING HOURS:
MONDAY-SATURDAY
9.30am-6pm
(MON open 10am,
SAT close 5pm)

SCANNING RECEIVERS

ALINCO

DJX1	New!	£269.00

ICOM

R1	Micro size scanner	£369.00
R100	Excellent mobile	£510.00
R7100E		£1120.00
R9000E		£4080.00

AOR

AR3000A	New improved	£765.00
AR2002	Old favourite	£395.00
AR2800		£395.00
AR2500	Ask about software!	£419.00
AR2000		£269.00
AR1500	Handheld inc. SSB!	£299.00

SIGNAL

R537S	Tuneable airband RX	£59.95
R550	40 ch airband	£129.00
R535	VHF, UHF airband	£254.00

WIN

WIN108	Free binoculars!	£179.00

YUPITERU

MVT7000	Great handheld	£289.00
VT125UK	Airband scanner	£179.00

FAIRMATE

HP2000	Same spec AR2000	£259.00

SONY

AIR7	Airband, AM/FM PSB	£229.00

YAESU

FRG9600	Old faithful with SSB	£520.00

ACCESSORIES

NEW FROM MALDOL

"ACTION HUNTER" series of wide band set top and mobile antennas to suit most scanners. Also TX on ham and cellphone! Call for details.

JIM M75	Scanner preamp	£69.95
JIM PSU101	Base stand/charger	£29.95
D505	Active mobile ant	£69.95
D707	Active base ant	£99.95
D130N	Wide band discone	£81.00
REVCONE	Low cost discone	£39.95
Headphones		from £9.95
TCM 84V	Voice activated recorder	£34.95
Magnetic longwire balun		£36.00
AT1000	SWL ATU	£79.00

Plus all the books, frequency guides, connectors, insulators, aerial wire and coax to compliment your equipment.

SHORTWAVE RECEIVERS

KENWOOD

R2000	£549.00
R5000	£895.00

ICOM

R72E	£659.00
R71E	£875.00

YAESU

FRG8800	£649.00

SONY

SW1E	£149.95
SW7600	£149.95
2001D	£279.95
SW77E	£339.95

JRC

NRD535	£1099.00

LOWE

HF150	£329.00
HF225	£429.00

Printed circuit boards for *SWM* constructional projects are now available from the SWM PCB Service. The boards are made in 1.5mm glass-fibre and are fully tinned and drilled. All prices quoted in the table include Post and Packing and VAT for UK orders.

Orders and remittances should be sent to: **PW Publishing Ltd, FREEPOST, Enefco House, The Quay, Poole, Dorset BH15 1PP**, marking your envelope **SWM PCB Service**. Cheques should be crossed and made payable to PW Publishing Ltd.

When ordering please state the Article Title as well as the Board Number. Please print your name and address clearly in block capitals and do not enclose any other correspondence with your order. You may telephone your order using Access or Visa. A telephone answering machine will accept your order outside office hours.

Please allow 28 days for delivery. Only the p.c.b.s listed here are available.

SHORT WAVE MAGAZINE PCB SERVICE

VISA Access

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Board	Title of Article	Issue	Price £
SR008	Experimental VHF Receiver	Jun 91	5.81
SR007	VLF Receiver	Dec 90	5.24
SR006	Medium Wave AM Radio	Nov 90	3.34
SR005	R210 Converter	July/August	6.87
SR004	PRO-2004 Modifications	Oct 89	6.63
SR003	HF to VHF Converter	Aug 89	5.22
SR002	Weather Satellite Reception	Jun 88	3.88

more letters!

Dear Sir

Thanks for the continuing excellence of *SWM*. Please keep it up.

Like Mr Heyes (Letters, April *SWM*) I have enjoyed tracking down the aeronautical beacons. I also suffered from the same problem - that of identification.

I can recommend to Mr Heyes a book called *The Europe & Middle East Supplement*. It is published by British Airways Aerad, PO Box 10, Aerad House, Hounslow, Middlesex TW6 2JA. It costs just under £10 and can be ordered by 'phone using a credit card (081-562 0795). I believe it is published monthly and is intended for use by airline pilots. I have found that one copy a year is sufficient as the beacons do not change very much. If this book is coupled with the Aerad Radio Navigation Charts EUR 1/2 and 3/4. most of the beacons in the UK and Europe can easily be identified.

The only drawback to this book is that the information is contained in an alphabetical sequence and not by frequency. With a little bit of time (and a computer) such a list can be produced.

I have enclosed a corrected list with locations of those beacons heard by Mr Heyes. I assume that the beacon listed as NE Heathrow is actually ME as this ties in with the Manchester Locator/Outer marker. I do not think that Heathrow has an NE marker, only OE.

316	OE	Dublin Airport (locator/outer marker)
317.5	VS	Valenciennes, Franco-Belgian border
319	LEC	Stavanger Consol station
323	WPL	Welshpool, Mid Wales (NDB)
323	SBL	Sherburn in Elmet, Humberside (NDB)
325	BAE	Barton, NW of Manchester (Airway A1 x B1)
335	WCO	Westcott (NDB on A47 S of Daventry)
340	HAW	Nr Dee Estuary (Locator)
349.5	LPL	Liverpool (Locator/Outer marker)
374	RNR	Radnor, S/Mid Wales (NDB A25 x B39)
380	WFD	Woodford, SE of Manchester (NDB on W923)
388	MCR	Manchester (Locator/Outer marker)
396	ME	Manchester (Locator/Outer marker)
407	GAR	Garristown, W of Dublin (NDB on B1)

Ron Galliers, London

Dear Sir

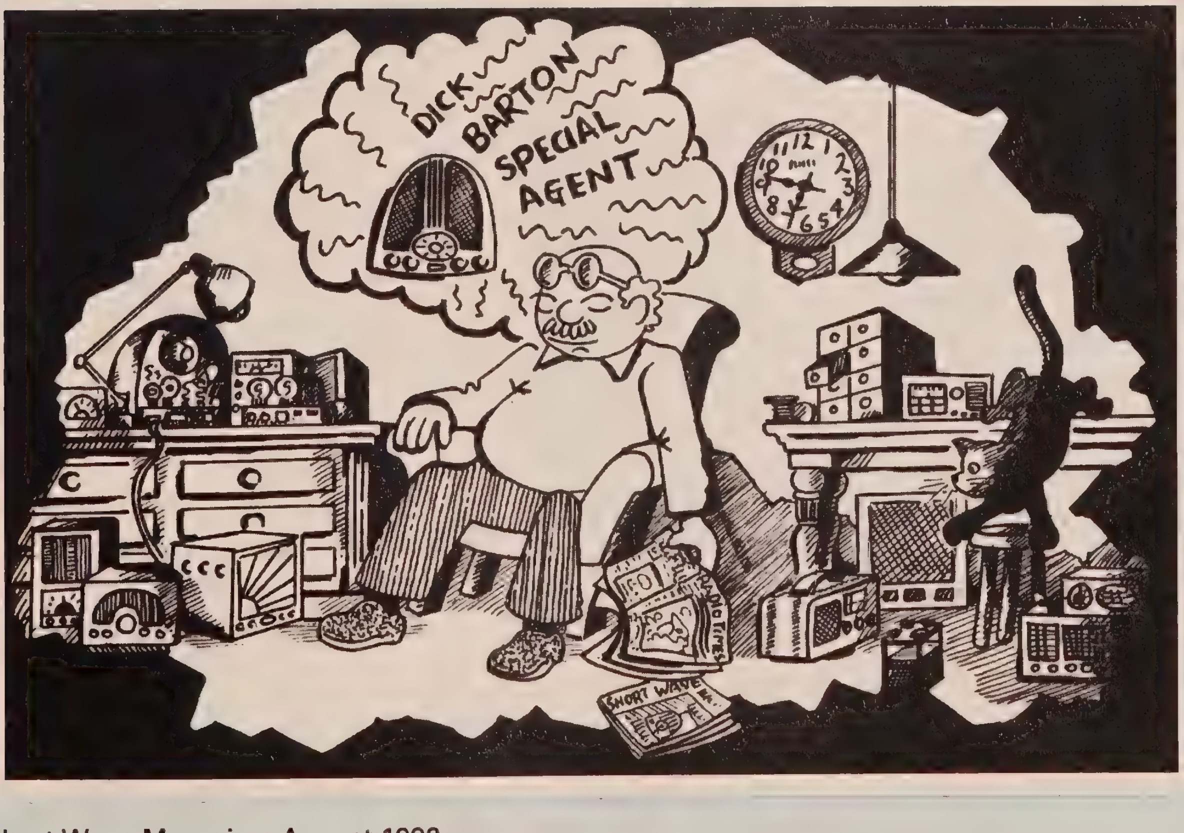
As an old s.w.l. of many years may I make a critical comment upon the phonetic alphabet in current use by 'hams'.

In the old days it was quite unmistakeable and somehow very appropriate to the game.

A - America
B - Boston
C - Canada
D - Denmark
E - England
F - France
G - Germany
H - Honolulu
I - India
J - Japan
K - Kentucky
L - London
M - Mexico
N - Norway
O - Ocean
P - Portugal
Q - Quebec
R - Radio
S - Santiago
T - Tokyo
U - United (or Uraguay occasionally)
V - Victoria
W - Washington
X - X-ray
Y - Yokohama
Z - Zanzibar

This Romeo Juliet stuff just ain't appropriate to short wave radio. Can't we go back to it?

J.A. Thompson, Kent



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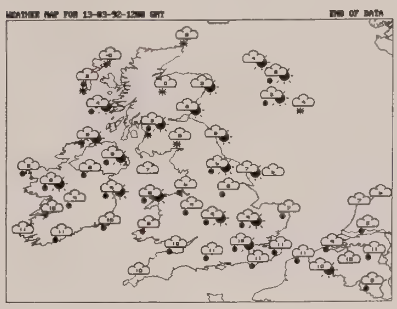

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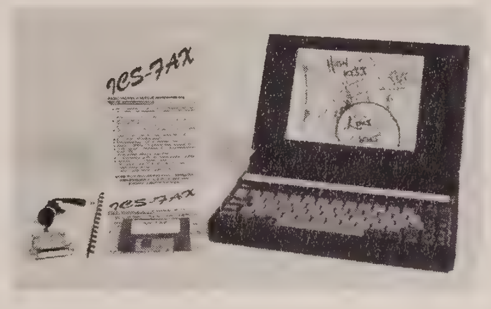

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***'A Guide to Weather Facsimile':* £17.95**

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A Battery Problem Solved

If you have one of the older, but still popular, Matsui MR4099 or one of the variants of this receiver, such as the Sangean 803, Realistic DX440 and the Tatung TMR7602, you may have problems in fitting Ever Ready Silver Seal R20S batteries into it. George Millmore has worked out a way to overcome the problem.

You will need a small cross-headed screwdriver to remove the screws holding the back and battery box and this should be a good quality one as the screws are small and easily damaged.

Removing the Back

1: Remove all batteries, including those used for the memory back up.

2: Lay the receiver on its front with the bottom towards you. Remove the six screws holding the back of the receiver, one of which is in the left hand corner of the battery loading aperture.

3: Carefully lift off the back turning it over to the left of the receiver as in the picture. The battery compartment is assembled onto the back, and will be removed with it.

4: Note the position of the clip under the rod antenna, connecting the rod and lead to the set. This has to be replaced in the same position when reassembling, or the rod will jam when extended. Undo screw A and remove the rod, clip and lead. The back, together with the battery compartment is now free from the set, which should be put in a safe place while work is being done on the battery compartment.

5: Remove the screw and retaining clip B. Using finger and thumb, pinch the battery compartment at C and D, to release it from the plastics clips, lift slightly and withdraw from the two clips, E.

Enlarging the Battery Compartment

It is now necessary to enlarge the inside of the battery compartment and the recess in the back of the set. Both are made of fairly soft plastics and can be rubbed away with a good grade or coarse sandpaper. This is best done with a strip of sandpaper wrapped around a spent battery, pushed to and fro in the compartment, and also along the recess in the back.

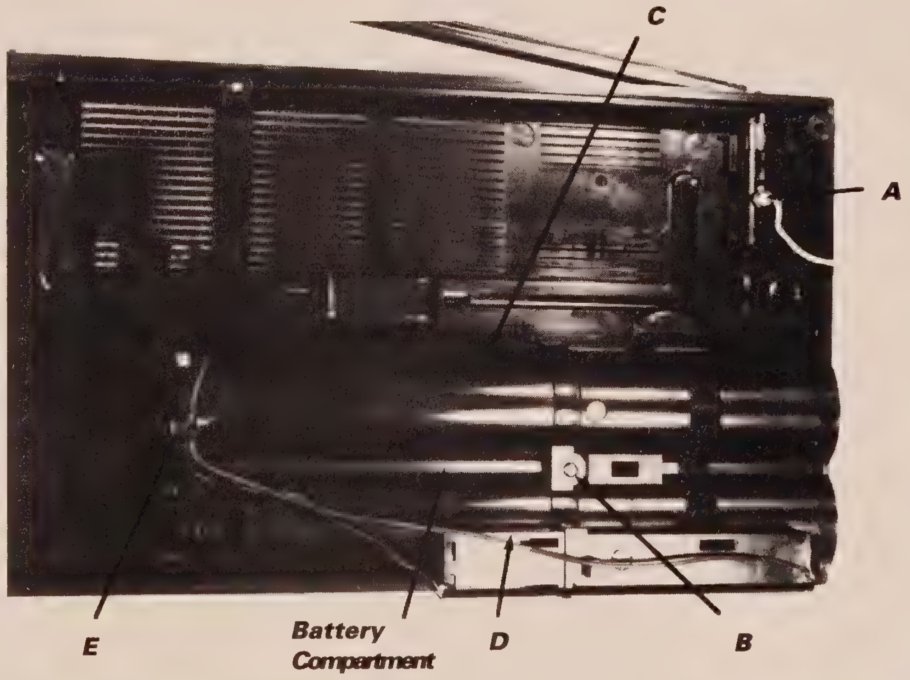
Pay particular attention to the ridges in the plastics under B, as these are the main cause of the problem. Remove enough of the plastics to allow the batteries to slide easily into the compartment.

To gain extra space, the cardboard sleeve was carefully removed from each of the four batteries that go into the compartment and replaced with a single layer of insulating tape. The cost of the tape is minimal compared to the extra battery life gained from using Silver Seal batteries. Finally, rub down with fine sandpaper to remove any roughness in the compartment and reassemble the set in reverse order.

It will be necessary to reset the clock and reprogram the memories after completing the modification. Any batteries that have become stuck in the compartment as a result of swelling can be removed by following steps 2-5 to gain access to the batteries from inside the compartment.

Footnote

The set used for the pictures was a new Sangean ATS-803A, kindly provided by **Nevada Communications**. In checking out the article against the set it was found that the battery compartment had been enlarged by the manufacturer and accepted Silver Seal batteries with no problems.



Manual AM/FM for the Realistic

Since a.m. is still in quite widespread use in the UK it is unfortunate that the a.m. detector in the PRO32 can only be employed when the set is programmed for civil airband reception (118 to 136MHz), says A. D. Ayres.

The modification is essentially very simple. It involves cutting one p.c.b. track, installing a switch and soldering two wires for the switch. There is some further minor work depending on how you decide to mount the switch.

What happens when you program the set for civil airband reception is that the microprocessor sends a voltage of +5.4V across a multi-way connector to the receiver board, this 5.4V enables the airband r.f. section and the a.m. detector. It also causes an electronic audio switch to select the output from the a.m. detector rather than the f.m. detector.

The modification uses a switch to supply the a.m. detector with 5.4V and to feed this as a control voltage to the electronic audio switch. A p.c.b. track has to be cut so as to avoid activating the airband r.f. section when we only want to activate the a.m. detector and electronic audio switch. This track must be cut in the correct place or the microprocessor will not be able to select airband when it is required, (see **Fig. 1**).

It should be noted that this modification brings a.m./f.m. selection totally under manual control, so when you do want to listen to airband you will have to select a.m. yourself as the microprocessor will no longer be able to do it automatically.

Snags

The problem is that there is very little room for fitting switches inside the PRO 32. This difficultly is also compounded by the fact that you may not want to make holes in the case.

One practical solution to this problem is to remove the earphone socket and to install a sub-miniature toggle switch in the hole, the wires that originally fed through the socket switching action being soldered together and the joint insulated with tape. This does, of course, mean that you lose the earphone facility and if this is not acceptable there are two more possibilities. Looking from the back you wil see a small amount of free space at the top left hand corner, it may be possible to install a small open frame type earphone jack in this position although it does mean drilling the case. Alternatively, the charge socket can be rewired to act as an earphone socket as it too has a switching action, the nice thing about this is that there is no need for the charge socket as the batteries come out in a tray and can be charged externally. I decided just to do without the earphone as I never used it, but for those of you who would like to try the charge socket conversion I have given the relevant wiring diagram in **Fig. 3**.

The Modification

Remove the back of the case by unscrewing the four obvious screws, use the correct size of crosshead jeweller's screwdriver for this to avoid chewing up the screw heads. Referring to

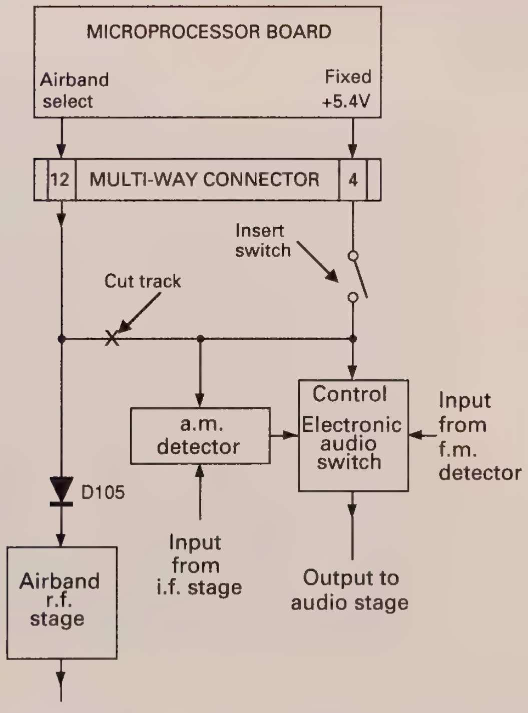


Fig. 1: Block diagram.

PRO 32

Fig. 2, locate the rear of the multiway connector J105 near the top of the board, the pins are clearly numbered so there should be no problem here. To get clear access to pins 4 and 12 it will be necessary to delicately move the wires aside. Haiving located pin 12 look about 3mm below it to find D105, using a bright light and a magnifier examine D105, the anode end connects to a surface track that runs off between the legs of a 1nF ceramic capacitor C198. This is the track that must be cut, do it using a sharp fine pointed tool, check your work under the magnifier.

Next remove the earphone socket, the white and yellow wires are taken off and soldered together, the joint can be insulated with tape. The black wire is taken off but it was using the earphone socket as a passing connection point so it will need soldering up to maintain its continuity, again insulate with tape. The white wire is the speaker wire and the yellow wire is the audio output, the black is ground.

Install the subminiature toggle switch in the earphone socket hole, slight reaming may be needed but don't overdo it or the earphone jack won't go back properly if you ever want to reverse the mod.

Locate pin 4 on the multi-way connector; this carries a permanent 5.4V. Solder a thin wire to this pin and connect the other end to one side of the switch. If you are using a d.p.s.t. switch take care to get the correct terminals for a simple on/off action.

Next locate R184, this is the tricky bit, it lies between the two diodes D122 and D123, the thing that looks like a resistor with the upper leg cut off is actually the test point TP105, R184 lies at one o'clock from TP105. Having located R184 you will find that it is vertically mounted, the leg that you can see, i.e. the top one, is covered in insulating material, use a sharp edge to scrape away some of this insulation, use a fine pointed soldering iron to tin the bare patch and then solder a fine wire to it. This wire goes to the other side of the switch and the modification is now complete.

Checking

Check that none of your wiring is causing short circuits and power up the set, select an a.m. station and try the switch in both positions the f.m. position should give low volume distorted audio while the a.m. position should give clear reception. Attempting to receive f.m. in the a.m. position will probably give no audio at all. Given careful work and attention to detail, the chance of error is small.

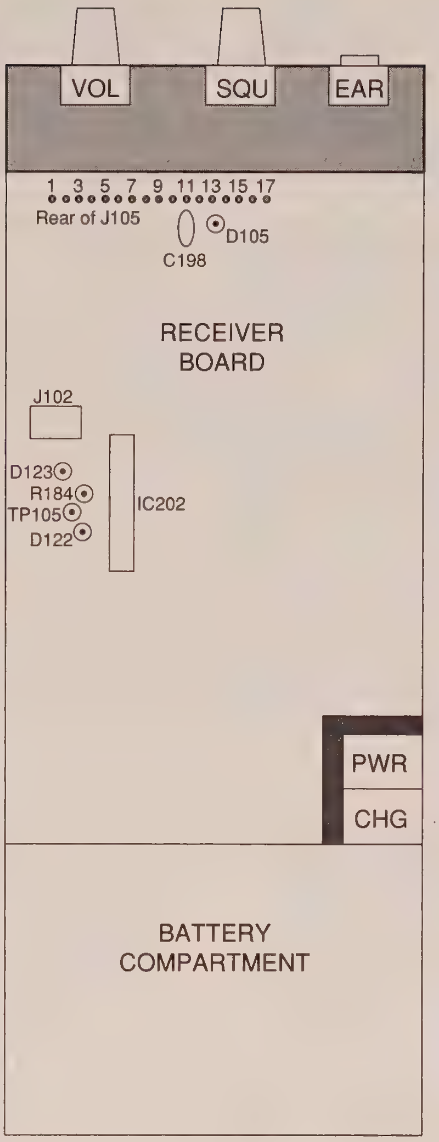

VOL
SQU
EAR
1 3 5 7 9 11 13 15 17
Rear of J105
C198
D105
RECEIVER BOARD
J102
D123
R184
TP105
D122
IC202
PWR
CHG
BATTERY COMPARTMENT

Fig. 2.

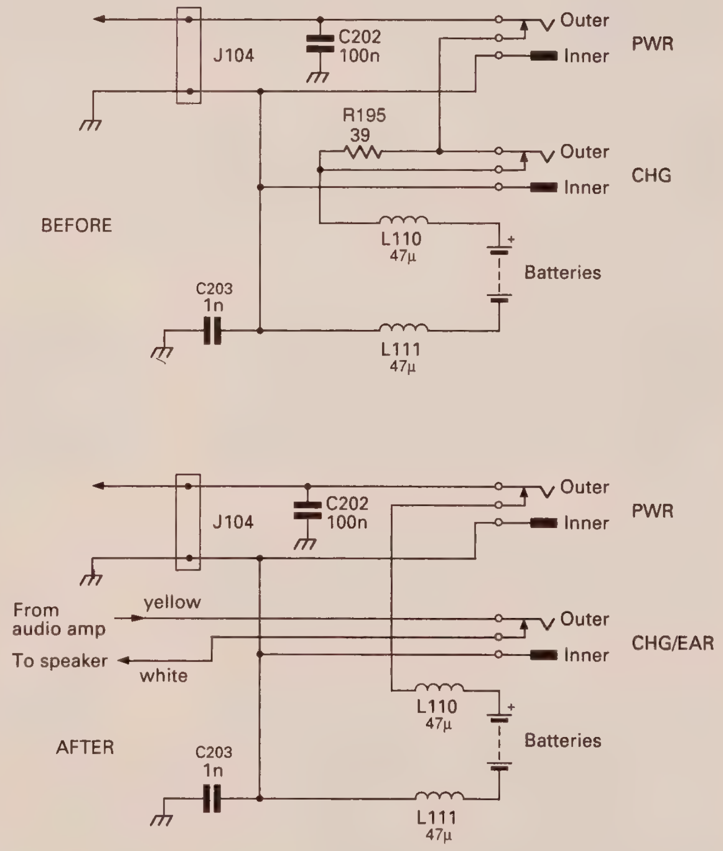

J104
C202 100n
Outer
Inner
PWR
R195 39
Outer
Inner
CHG
BEFORE
L110 47µ
Batteries
C203 1n
L111 47µ
J104
C202 100n
Outer
Inner
PWR
From audio amp
yellow
To speaker
white
Outer
Inner
CHG/EAR
L110 47µ
Batteries
AFTER
C203 1n
L111 47µ

Fig. 3: Charge socket conversion.

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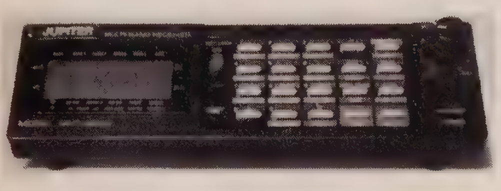

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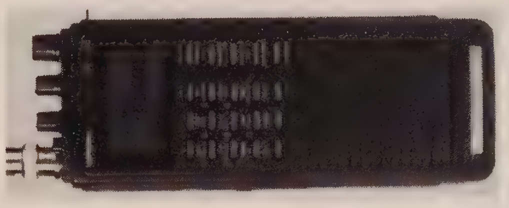

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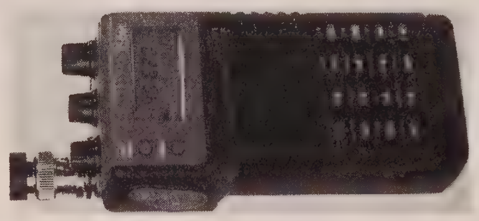

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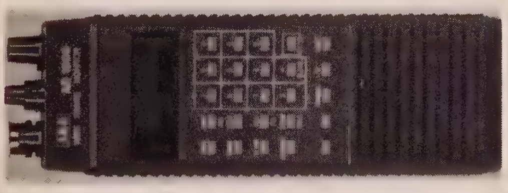

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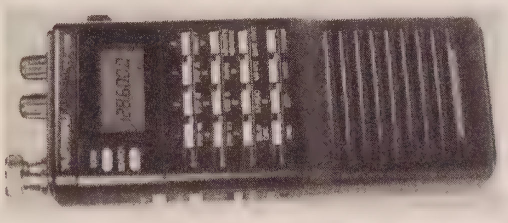

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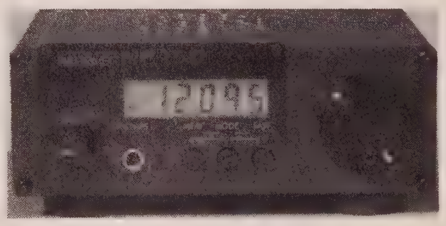

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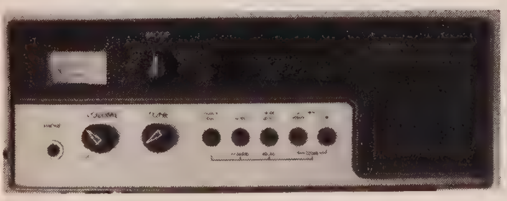

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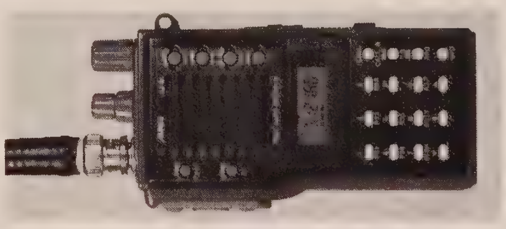

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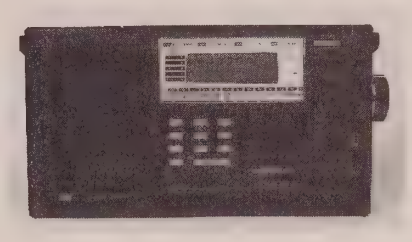

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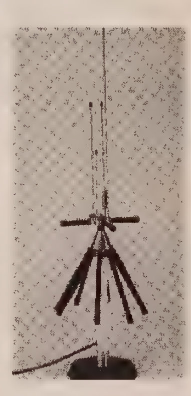

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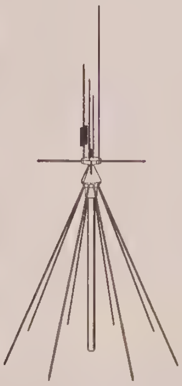

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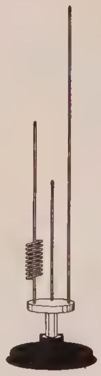

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Broadening the Bandwidth of the Datong FL2 and FL3 Audio Filters

In these days of overcrowded wavebands, being used by ever more powerful transmitters, short wave listeners require more selectivity from their equipment. One way in which interference can be eliminated is by processing the audio signal after it leaves the receiver. Don Phillips M.Sc describes how to perform a simple modification on the popular Datong range of filters to enable them to be used more flexibly.

Essentially the process of radio reception involves the amplification and selection of in-coming signals. The act of selecting what is required and exclusion of that which is not can take place anywhere in the signal's path, from the antenna to the loudspeaker. With the advent of integrated circuits and the ability to lay out complex circuitry in limited space, the production of small audio filters with knife-edge selectivity has become a practical proposition.

British Success

One of the most successful of these, known to radio amateurs and short wave listeners world-wide, is made by Datong, a Leeds based company. The FL2 has independently adjustable high pass and low pass filters with very steep cut off skirts. The unit is connected in series with an external loudspeaker or phones; it contains its own audio amplifier, capable of driving a loudspeaker, which dutifully produces an output at the same volume as the signal fed in. This means that the user can precisely control the range of frequencies which pass through it. Low rumblings and high whistles which a receiver's own selectivity circuits fail to eliminate to not reach the listener's ears.

The FL2 also has an adjustable notch filter which can be set to eliminate a specific whistle. The FL3 is exactly the same, except that it is also incorporates an automatic notch filter which will detect the presence of a whistle, home in, and eliminate it.

Lower Frequencies Lost

The author, a keen DXer and short wave listener, used an FL3 for some months and developed and admiration which was marred by one single flaw. The pass-band frequencies, that is the frequencies which the filter will allow through, can be set anywhere between 3kHz and 200Hz. For prolonged shortwave listening the minimum of 200Hz was found to be too high. Certainly, frequencies necessary for purely communication purposes were admitted, but lower tones were filtered out. Bass guitars were lost, as were the warmer tones of speech.

The remedy is to reduce the minimum high-pass frequency to a nominal value of 80Hz. This modification is quite straightforward; it involves the replacement of four capacitors and can be carried out by anybody handy with a soldering iron and in possession of a mimumum of tools.

The Modification

The following procedure should be followed:

1) Remove the top cover by removing the four feet. The unit slides out.

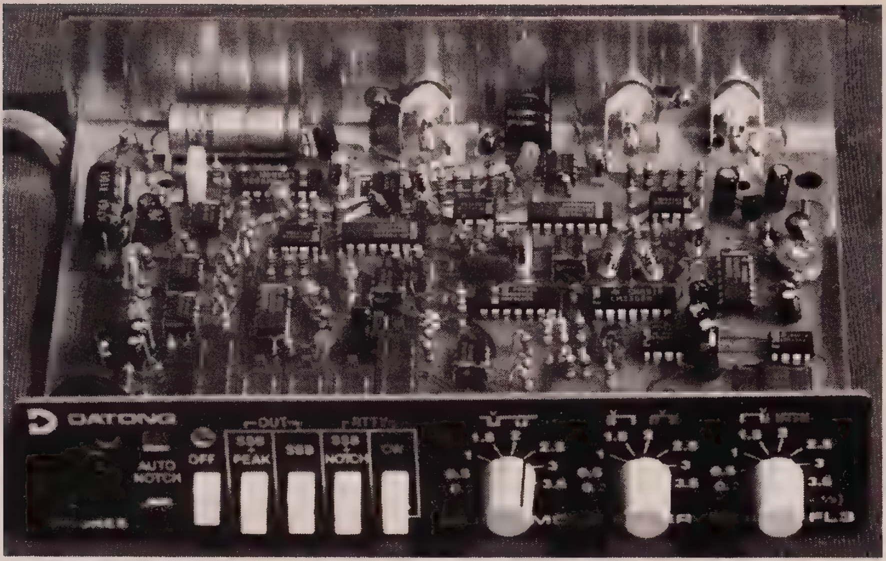
2) For FL3: remove the two screws securing the auto notch filter board (the smaller board), and remove the mounting pillars below it.

3) Remove the remaining nuts holding the main printed circuit board in place.

4) Remove the four screws from the base plate which secure it to the front and back panels. The base plate can now be lifted off.

5) Carefully remove the four 1nF (1000pF) capacitors indicated. The use of Solderwick may help in freeing them from the board and clearing solder form the holes. The 3.3nF (3300pF) capacitors must now fitted in their place. Make sure that their connecting wires do not foul adjacent copper tracks on the double sided printed circuit board.

6) Re-assemble in reverse order of dismantling.



Internal view of the Datong Audio Filter. The modification described in this article is simple to carry out.

Improvements

The filter will work exactly as before except that there will much more audible depth to the signal when the high pass filter is set at its minimum. As well as making general short wave listening more enjoyable, it is found that being able to hear lower audio frequencies makes adjusting for a zero beat in e.c.s.s. reception a much easier task. The author has also found the modified filter to be invaluable in reproducing his collection of historic 78r.p.m. records. The scale printed on the front panel round the (central) adjustment potentiometer will of course, now be slightly inaccurate. This has not presented any difficulties in practice.

Components Required

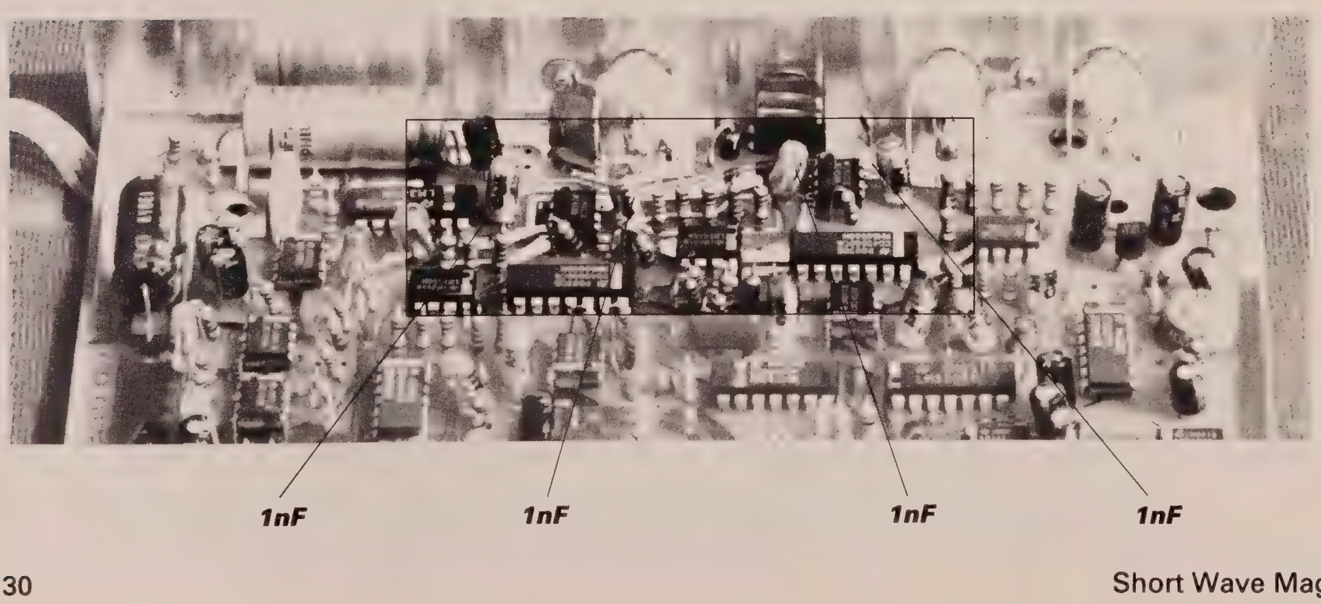
It is important that the four capacitors are physically small enough to be fitted on the crowded circuit board. They must also be of reasonably close tolerance as what is effectively being adjusted is the time constant of four separate filters working in tandem. If they do not work together the overall sharpness of the filter unit will be lost. Tubular polystyrene capacitors of 5% tolerance were found to be suitable; these are easily available from Cirkit (Stock no. 04 33209).

Although this modification does not call for any cutting or drilling to the Datong filter, it should be borne in mind that modifications to equipment generally invalidate the guarantee obligations of the manufacturers.

I would like to express my thanks to Datong for their initial assistance in the development of this modification. Information about Datong products can be obtained directly from **Datong Electronic Ltd., Clayton Wood Close, West Park, Leeds LS16 6QE. Tel: (0532) 744822**

Abbrevations

e.c.s.s.	exalted carrier single sideband
Hz	hertz
kHz	kilohertz
nF	nanofarad
pF	picofarad
r.p.m.	revolutions per minute



This annotated photograph shows the four capacitors that are to be changed for 3.3nF.

An Extra Selectivity Option for the Yaesu FRG-8800

The popular Yaesu FRG-8800 Communications Receiver comes from a well established and celebrated stable. Don Phillips MSc, describes how to build and install a circuit that will raise the performance and flexibility of this versatile work-horse.

The modification described could also be adapted to assist owners of other receivers who require an addition selectivity setting. It is designed to avoid the questionable practice of drilling, filing or cutting of chassis or panels.

It is compact, neat and easy to use. It is generally available and in many respects, its performance is very good. The Yaesu Musen FRG-8800 is rated by the *World Radio TV Handbook* as a 'serious short wave listener's receiver', but, from the analysis made of its performance, it would appear that it is excluded from the highest category of 'semi-professional receiver' by being described as having only 'fair' selectivity. The author, an active broadcast DXer, has found his own modified receiver to now be unquestionably good in this respect.

An Additional Circuit

The FRG-8800 is manufactured with the switchable option of two selectable bandwidths which are nominally 6 and 2.7kHz, achieved by two ceramic filters in the 455kHz i.f. circuitry. The 'a.m. wide' mode employs the former; the 'a.m. narrow', and upper and lower sideband and c.w. modes employ the latter. The additional circuit described in this article detects whenever the 2.7kHz filter is switched in and provides the i.f. signal with alternatively the narrow 2.7kHz filter, or a narrower 2.4kHz filter. In other words, when listening in a.m. mode, the listener can call upon three selectivity settings by simply toggling the NAR/WIDE button; the order will be: 6 - 2.7 - 2.4 - 6kHz and so on.

When listening in other modes, switching between 2.7 and 2.4kHz is effected by switching through the a.m. wide setting, e.g.: l.s.b. (2.7) - a.m. - l.s.b. (2.4). In practice this is easy to use; by switching from u.s.b. to l.s.b. directly the filter in use is retained. The advantages of installing a narrower filter in this way are two-fold, namely, the use of the 2.7kHz filter is retained giving the a.m. user an overall choice of three selectivity settings, and there is no need for fitting an additional switch or making any external modification to the receiver. Although this modification is fully reversible and the receiver can be fully restored to its original specification, it should be noted that tampering with the equipment invariably invalidates the manufacturer's guarantee.

Circuit Description

The circuit employed

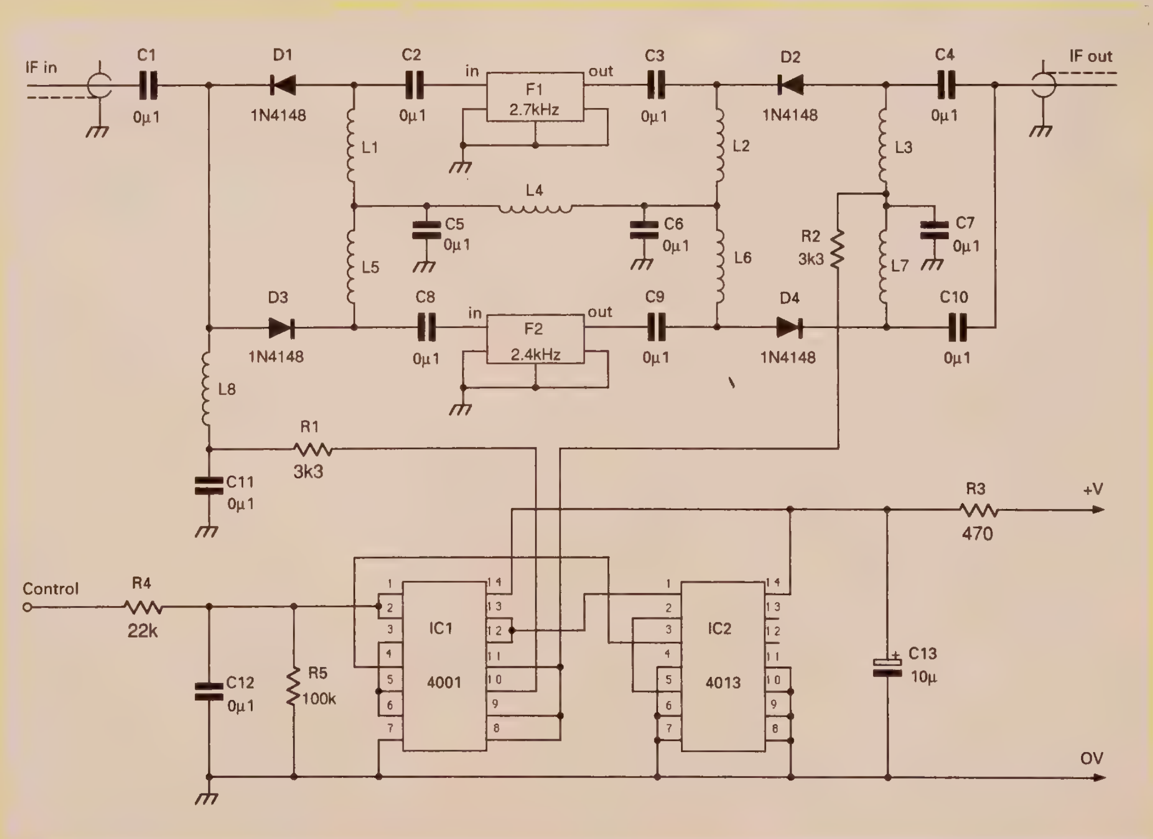
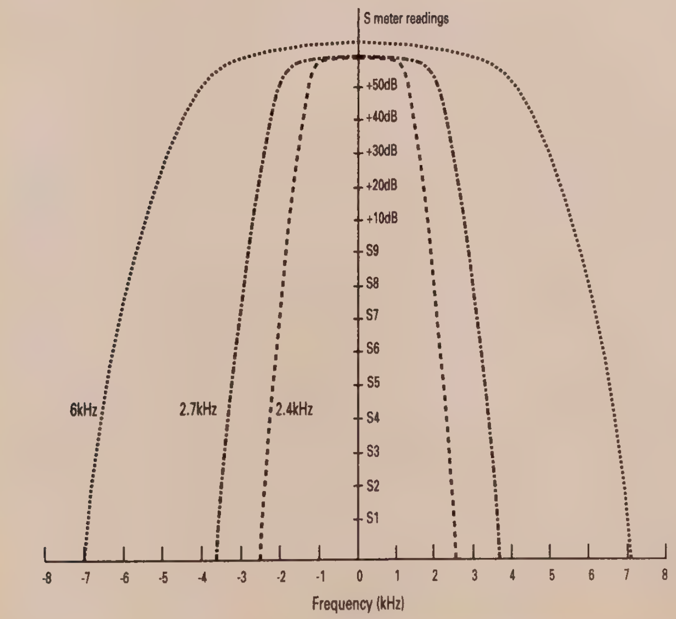


Fig. 1: Filter switching circuit.

consists of diode switching controlled by simple logic (**Fig.1**). The control voltage is connected to the FRG-8800's own filter switching circuits and will receive the forward edge of a positive pulse every time the narrower filter is called upon. This pulse is buffered by IC1 and fed to a D type flip-flop, IC2. This effectively acts as a divide by two, making its output go positive once for every two pulses that reach the control point. The output of IC2 returns to IC1 where it is buffered and an inverted output also produced.

We have then two voltage output points, pins 9 and 10 of IC1. When one is positive, the other is negative: they change polarity each time the control pulse is generated - each time the user selects the narrow filter setting on the receiver. This see-sawing voltage is then connected to the diode network. When the positive voltage is delivered to the input side of the circuit, via L8, diodes D3, D4, D5 and D6 are switched on and the i.f. signal passes through Filter 1. Similarly when the voltage is reversed, diodes D1 and D2 are switched on and Filter 2 comes into use. The use of r.f chokes instead of resistances allows the d.c. to be brought to the circuit without significantly changing the overall in/out impedance of the circuit: as far as the FRG-8800's own circuits are concerned this additional circuit 'looks' much like the original filter that it replaces.

Fig. 2: Intermediate frequency selectivity curves.



Versatility

Although this modification has been designed with the FRG-8800 in mind, it could easily be adapted to fit a variety of receivers. If it were not possible or desirable to utilise a receiver's own logic circuitry to control this circuit, it can be easily switched by connecting a press-to-make switch (such as Cirkit 53-00300) from the positive side of C15 and the control input side of R4.

Making a Start

In view complexity of the FRG-8800 circuitry and the requirement to faithfully follow the circuit shown in **Fig. 1**, it is recommended that only those with a proven competence to dismantle equipment and lay out a circuit board should undertake this modification. It does, however, call for very little direct work with the receiver - simply the careful relocation of a ceramic filter unit and the soldering of two additional wires to the main p.c.b. It is recommended that the *FRG-8800 Service Manual* (at a cost of around £8) is purchased.

Before laying a hand on the unsuspecting FRG-8800, it is suggested that the circuit is completed and tested. It will not be possible to incorporate the 2.7kHz filter at this stage, but the signal path can be completed by placing a wire link between C8 and C9. A piece of Veroboard approximately 127 x 95mm is ideal for building the circuit on. It will be necessary to leave three or four copper tracks along one side unused to enable the board to be subsequently mounted.

It is advisable to lay out the components in a logical manner, sticking, as far as possible to the relative positions of the components as shown in the circuit diagram. This will mean that the input and output is quite separate. Do not forget that the circuit is switching a radio frequency. Keep wiring and the use of copper tracks to a minimum. Make sure that all tracks that are not in use are earthed. Do not overheat the filters when mounting them, and always use holders for mounting the integrated circuits. CMOS logic is particularly vunerable to damage by static charges, so do not plug in the integrated circuits until switch-on time.

Testing the Circuit

The circuit is capable of running satisfactorily on any voltage between about 6 and 15V. It can be tested by using a 9V battery to power the circuit. The control point is then temporarily held to the positive terminal. Pin 4 of IC1 will go positive. Repeated positive pulses will be seen to divide by two as pin 1 of IC2 will respond to every other one. The see-sawing output voltage will be seen on pins 9 and 10 of IC1.

For the constructor who has access to a sweep generator and spectrum analyser, the dynamic testing of the circuit as a whole will be straightforward. For those of us without, it is possible to get some idea of whether the circuits are working by connecting the output of the board to the receiver's antenna socket and the input to a short antenna. Tune the receiver to 455kHz and check that the circuits are at least passing static at that frequency; also short out each of the two signal paths to earth via a capacitor in turn to check that the r.f is being switched.

Installing the New Board

Now comes the part that calls for a cool head and a steady hand. Place the receiver on an old towel or soft cloth and remove the top and bottom cover. Remove the internal batteries and the battery holder. Remove the six steel coloured screws to enable the back panel to become loose. Remove the six screws securing the main circuit board. Unplug the screened connector J01 (1st in Lo in, next to L28) form the main board. By easing the back panel carefully back it will be possible to ease up the main board to expose the underneath. The following surgery will be easier if the main board is held gently up by a piece of masking tape.

Next, very carefully remove the CF03, the larger of the two filters. It will be necessary to use Solderwick when doing this, taking care not to overheat the main board or component. Two pieces of thin coaxial cable, about nine inches in length, are now required to carry the signal from the new board to the site of CF03. R119 is connected to the input side; R121, the output. The use of narrow pins or short stubs of stiff wire to enable the coaxial wire to be mounted on the component side of the main board is recommended. The braiding should be connected at both ends, being the new circuit's only point of earthing.

The only other two connections to the main circuit are as follows. The 11V rail, which is called upon to act also as the positive supply voltage for the new circuit, runs down the very thin track down the whole length of the main circuit board; it passes next to CF03. It can be easily picked up at the small test point next to D31. The control input can be picked up from junction of R 146 which joins to the collector of Q60 (centre wire). Be sure not to allow solder to come into contact with adjacent tracks!

Mounting and Switching On

With the exception of the bottom cover, the FRG-8800 should be re-assembled, in reverse order of dismantling. The new circuit board can then be installed. The author does not have the v.h.f.converter installed in his FRG-8800; it was therefore possible to mount the new board in the space that this would occupy. By utilising the large hole on the top lip of the v.h.f. aperture to screw the new circuit to, it is possible to effect this modification without modifying the casing either externally or internally. If the v.h.f. converter is in place there should be sufficient room to mount an extra circuit behind the loud speaker. It is suggested that, in this circumstance, the practicalities of mounting the board can be explored before the circuit is constructed

The modified receiver is then ready to be switched on. It will not take the user long to become used to the fact that an extra selectivity position can be switched in by switching through the a.m. wide position. Serious DXing sessions soon develop the practice of hitting the NAR/WIDE button twice to move narrow to really rather good.

Plotting Selectivity Curves

Typical selectivity curves showing the relative responses of the three ceramic filters (**Fig.2.**) are helpful in appreciating the real improvement brought about by the addition of the 2.4kHz filter. The successful constructor of this modification can easily produce his or her own selectivity curves by using the excellent signal strength meter on the FRG-8800 which allows the plotting of a revealing comparison.

A steady unmodulated r.f signal source is connected to the receiver's antenna input. The receiver is set initially to a.m. wide, tuned in, and the source and the ATTenuator controls are adjusted until a +60dB reading on the signal strength meter is observed. Graphs for each filter position can then be made. The vertical axis is signal strength: S1 to +60dB. The horizontal axis is bandwidth in kilohertz; call the frequency you have tuned to zero and allow about 8kHz each side to plot the falling responses by detuning the receiver in 0.5kHz steps.

Short Wave Listening

Although it is instructive to observe how broad filter specifications really are under test conditions, there will be no substitute for using the newly installed narrow filter to hunt real DX. The additional filter will not only produce a narrower audio response when tuned to a.m. broadcasts, but an improvement in the reception of u.s.b. and l.s.b. signals will be noticed. One of the FRG-8800 design compromises made with the relatively broad 2.7kHz filter, is that when the receiver is tuned to an u.s.b. signal, some of the signal can be received in the l.s.b. mode. This means that interference in the unwanted sideband will be present and signals with different modulations on each sideband cannot be properly received at all. With the addition of the 2.4kHz filter these problems are overcome.

You Will Need

Resistors
Carbon Film 0.25W 5%

470Ω	1	R3
3.3kΩ	2	R1,2
22kΩ	1	R4
100kΩ	1	R5

Capacitors
Mylar foil

0.1μF	12	C1 to 12

Electrolytic

10μF 25V	1	C13

Inductors

10mH	8	L1 to 8 (Circuit 34-10302)

Semiconductors
Diodes

1N4148	4	D1 to 4

Integrated Circuits

4001	1	IC1
4013	1	IC2

Filters
Ceramic 455kHz i.f.

2.4kHz	1	F2 (CFJ-455K5)
2.7kHz	1	F2 (CFM-455JI) from FRG-8800

Miscellaneous
14-pin d.i.l. i.c socket (2); Veroboard 0.1in, 127 x 95mm; Coaxial cable RG174A/U 0.5m; Solder wick.

All components used can be obtained from:
Cirkit, Park Lane, Broxbourne, Herts EN10 7NQ Tel: (0992) 444111

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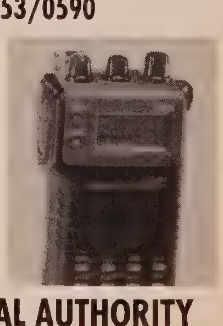

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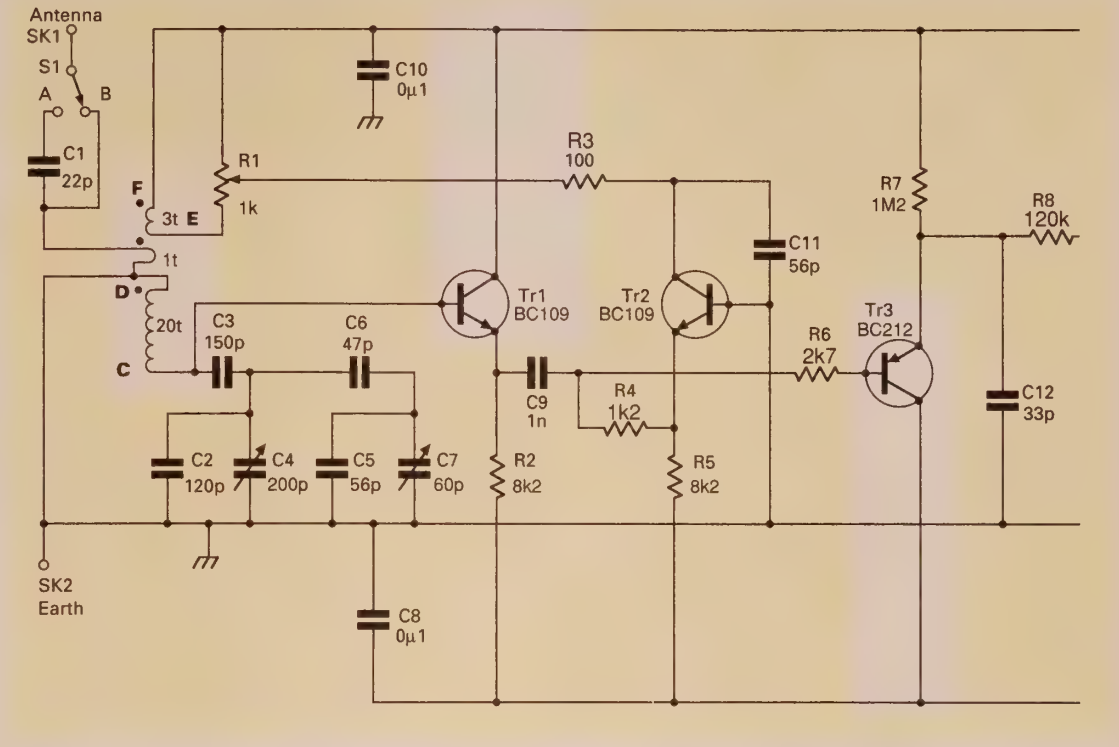
Follow-up

This follow-up offers some help with the constructional aspects of this project.

The coil was not shown on the printed circuit board overlay in an attempt to avoid cluttering up an already complex set of drawings. However, the various connections were identified on the p.c.b. by a series of letters alongside the appropriate points (e.g. **C**.)

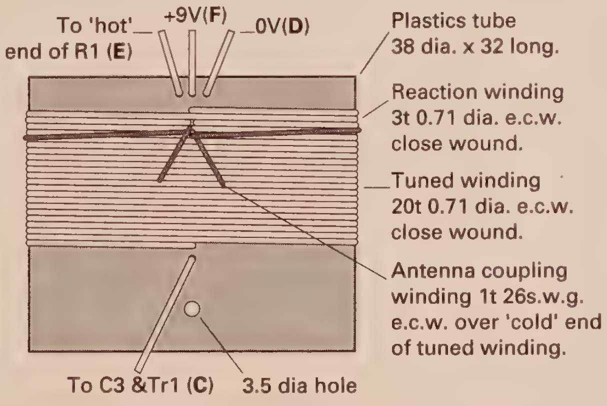
Unfortunately, neither the circuit diagram or the coil drawing carried these letters.

The circuit diagram shown here has the corrections outlined in part 3 as well as the coil letters. On the p.c.b. component overlay drawings, Figs. 3.3 & 3.4, the positioning of Veropins is shown by bold circles around the appropriate hole in the p.c.b. The use of Veropins simplifies the attachment of leads from components not on the p.c.b. Capacitor C1 is mounted directly onto the contacts of switch S1.



Antenna
SK1
S1
A
B
C1
22p
F
3t
E
R1
1k
1t
D
20t
C
C10
0µ1
C3
150p
C6
47p
C2
120p
C4
200p
C5
56p
C7
60p
C8
0µ1
SK2
Earth
R3
100
Tr1
BC109
Tr2
BC109
C9
1n
R4
1k2
R2
8k2
R5
8k2
C11
56p
R7
1M2
R8
120k
Tr3
BC212
R6
2k7
C12
33p

Fig. 4.1: Part of the circuit diagram showing the two corrections outlined in Part 3 of this project, together with the identification letters for the coil connections to the p.c.b.



To 'hot' end of R1 (E)
+9V(F)
0V(D)
Plastics tube 38 dia. x 32 long.
Reaction winding 3t 0.71 dia. e.c.w. close wound.
Tuned winding 20t 0.71 dia. e.c.w. close wound.
Antenna coupling winding 1t 26s.w.g. e.c.w. over 'cold' end of tuned winding.
To C3 &Tr1 (C)
3.5 dia hole

Fig. 4.2: Details of the coil with the identification letters for the connections to the p.c.b.

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New Marine Beacon Freq

Earlier this year, marine m.f. beacons across Europe changed frequency. Godfrey Manning G4GLM lists those in the British Isles.

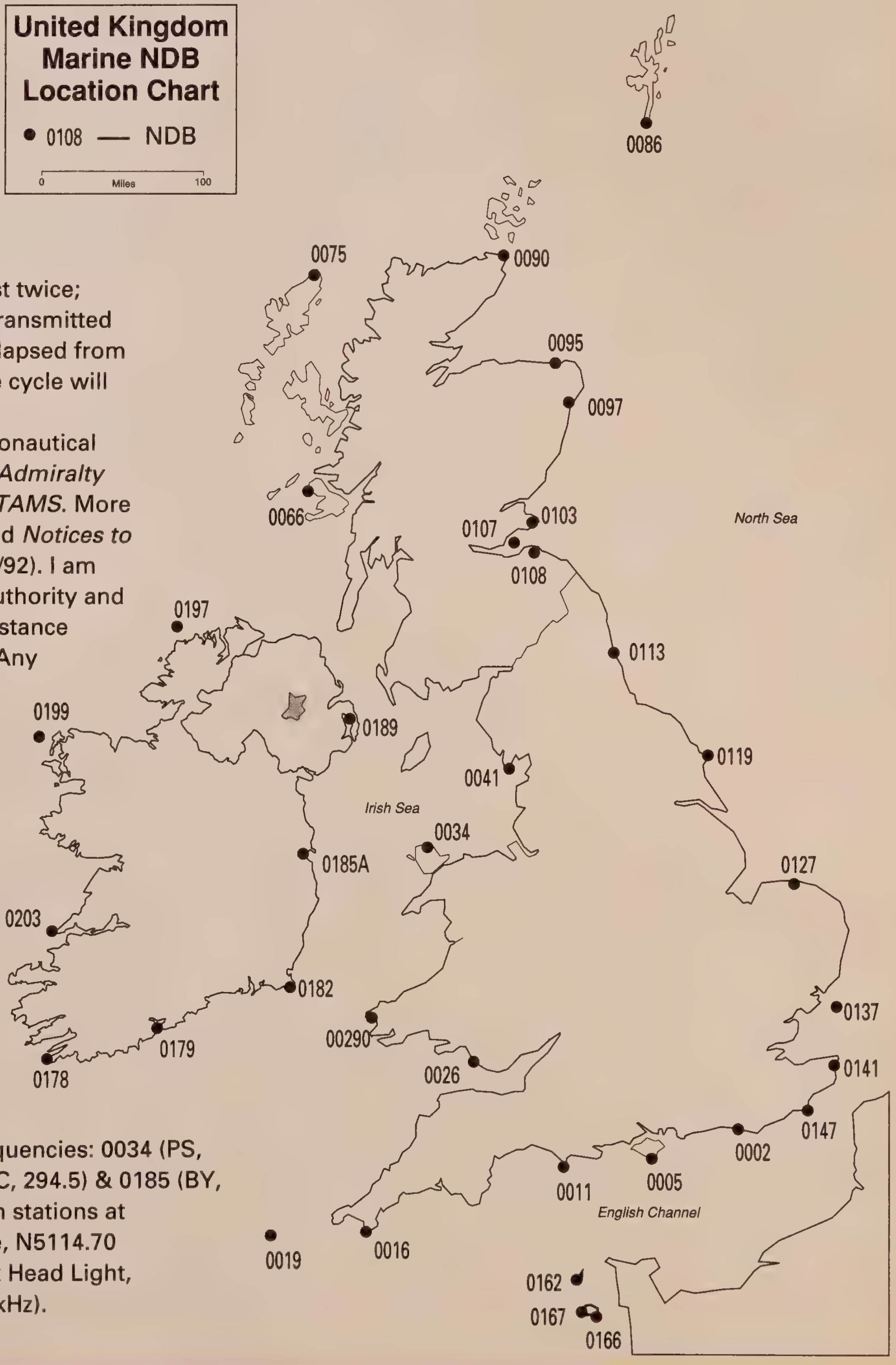
On April 1, the frequency of every marine m.f. n.d.b. changed. Although the new plan has effects throughout Europe, this article lists only those beacons still operating in the UK, Channel Islands and Ireland. Some beacons from the previous plan have now disappeared.

The advantage of the new scheme is that each beacon has its own frequency, without the need to be grouped with any others. Previously, each beacon in a group took it in turns to transmit. Frequencies are now only shared by beacons which are widely separated by distance and so may transmit simultaneously. Also, continuous operation is now available 24 hours a day. You will need a radio equiped with a b.f.o. to receive the c.w. Morse identifications of these beacons since there is no modulating tone. For about 13 seconds, the Morse callsign identification will be sent at least twice; thereafter, plain carrier will be transmitted until a total of 60 seconds has elapsed from the start of the Morse. Then, the cycle will repeat.

These beacons also have aeronautical application. Changes appear in *Admiralty Notices to Mariners* but not *NOTAMS*. More details appear in *AIC 28/1992* and *Notices to Mariners Weekly Edition 1* (11/1/92). I am indebted to the Civil Aviation Authority and the Hydrographic Office for assistance with the information in the list. Any errors or omissions are mine.

Beacons primarily intended for aviation use are not affected and do not appear in the main table, even if they are receivable by vessels at sea.

The main table does not include calibration stations. These are sometimes co-located with n.d.b.s but are not in continuous operation. The following beacons (by reference number) have associated calibration stations with the given callsigns and frequencies: 0034 (PS, 294.5); 0113 (PT, 294.5); 0179 (KC, 294.5) & 0185 (BY, 286.5). There are also calibration stations at Lynmouth Foreland Light House, N5114.70 W00347.13 (FP, 294.5) and Black Head Light, N5446.01 W00541.29 (BA, 294.5kHz).


United Kingdom Marine NDB Location Chart
● 0108 — NDB
0
Miles
100
0086
0090
0075
0095
0097
0066
0107
0103
0108
North Sea
0197
0113
0199
0189
0119
0041
Irish Sea
0034
0185A
0127
0203
0182
0137
00290
0179
0178
0026
0141
0147
0002
0011
0005
English Channel
0019
0016
0162
0167
0166

encies in the British Isles

Marine n.d.b.s from 1/4/92
Refer also to Map

Ref	Name	Position	Ident	Freq. (kHz)
0002 *	Brighton Marina	N5048.67 W00005.95	BM	294.5
0005	St. Catherine's Light	N5034.52 W00117.80	CP	293
0011	Portland Bill Light	N5030.82 W00227.30	PB	313
0016	Lizard Light	N4957.58 W00512.07	LZ	284.5
0019	Round Island (Scilly)	N4958.70 W00619.33	RR	298.5
0026	Nash Point Light	N5124.03 W00333.06	NP	299.5
0029	South Bishop Light	N5151.15 W00524.65	SB	290.5
0034	Point Lynas Light	N5324.97 W00417.30	PS	304
0041	Walney Island Light	N5402.92 W00310.55	FN	306
0066	Rhinns of Islay Light	N5540.38 W00630.70	RN	293
0075	Butt of Lewis light	N5830.93 W00615.72	BL	289
0086	Sumburgh Head Light	N5951.30 W00116.37	SB	304
0090	Duncansby Head Light	N5838.67 W00301.42	DY	290.5
0095	Kinnairds Head Light	N5741.87 W00200.13	KD	301.5
0097	Girdle Ness Light	N5708.32 W00202.83	GD	311
0103	Fife Ness Light	N5616.73 W00235.10	FP	305
0107 *	Inchkeith Light	N5602.02 W00308.08	NK	286.5
0108 *	Fidra Light	N5604.40 W00246.98	FD	290
0113	Souter Light	N5458.23 W00121.80	SJ	292
0119	Flamborough Head Light	N5406.95 W00004.87	FB	302.5
0127	Cromer Light	N5255.45 E00119.10	CM	313.5
0137 *	Sunk Light	N5151.00 E00135.00	UK	294.5
0141	North Foreland	N5122.49 E00126.85	NF	311
0147	Dungeness Light	N5054.77 E00058.67	DU	300.5
0162 *	St. Peter Port, Guernsey	N4927.37 W00231.37	GY	304.5
0166 *	St. Helier, Jersey	N4910.62 W00207.50	EC	306
0167	La CorbiVre Light	N4910.85 W00214.90	CB	295.5
0178	Mizen Head	N5127.05 W00948.80	MZ	300
0179	Old Head of Kinsale Lt	N5136.27 W00831.97	OH	288
0182	Tuskar Rock Light	N5212.15 W00612.38	TR	286
0185A	Baily Light	N5321.68 W00603.09	BY	289
0189	South Rock Light Vessel	N5424.47 W00521.92	SU	291.5
0197	Tory Island Light	N5516.35 W00814.92	TY	313
0199	Eagle Island Light	N5416.98 W01005.52	GL	307
0203	Loop Head Light	N5333.65 W00955.90	LP	311.5

* Indicates a low-powered beacon, range 10nm or less. Marine n.d.b. Location Diagram

Aeronautical n.d.b.s Receivable by Vessels at Sea

Ref	Name	Ident	Freq. (kHz)
0007	Fawley, Hythe	FAW	370
0008	Bournemouth (Hurn)	HRN	401.5
0012	Exeter	EX	337
0013	Berry Head	BHD	318
0017	Penzance Heliport	PH	333
0018	St. Mary's, Isles of Scilly	STM	321
0020	St. Mawgan	SM	356.5
0025	Cardiff	CDF	363.5
0027	Swansea	SWN	320.5
0030	Strumble	STU	400
0031	Aberporth	AP	370.5
0039	Blackpool	BPL	276.5
0049	Ronaldsway, Isle of Man	RWY	359
0055	Turnberry	TRN	355
0074	Stornoway	SWY	669.5
0078	Dounreay	DO	364.5
0082	Scatsta	SS	315.5
0085	Sumburgh, Shetland Is.	SUM	351
0091	Wick	WIK	344
0093	Kinloss	KS	370
0096	Scotstown Head	SHD	383
0101	Leuchars	LU	330
0120	Ottringham	OTR	398.5
0133	Great Yarmouth	ND	397
0138	Southend	SND	362.5
0161	Alderney	ALD	383
0163	Guernsey	GRB	361
0165	Jersey East	JEY	367
0168	Jersey West	JW	329
0181	Waterford	WTD	368
0184	Killiney	KLY	378
0187	Dublin (Rush)	RSH	326

Marine n.d.b.s by Ident

Ident	Reference
BL	0075
BM	0002
BY	0185A
CB	0167
CM	0127
CP	0005
DU	0147
DY	0090
EC	0166
FB	0119
FD	0108
FN	0041
FP	0103
GD	0097
GL	0199
GY	0162
KD	0095
LP	0203
LZ	0016
MZ	0178
NF	0141
NK	0107
NP	0026
OH	0179
PB	0011
PS	0034
RN	0066
RR	0019
SB	0029 & 0086
SJ	0113
SU	0189
TR	0182
TY	0197
UK	0137

Marine n.d.b.s by Frequency

Freq. (kHz)	Reference
284.5	016
286.0	182
286.5	107
288.0	179
289.0	075 & 0185A
290.0	108
290.5	0029 & 0090
291.5	189
292.0	113
293.0	005 & 0066
294.5	0002 & 0137
295.5	0167
298.5	0019
299.5	0026
300.0	178
300.5	0147
301.5	0095
302.5	0119
304.0	034 & 0086
304.5	0162
305.0	103
306.0	041 & 0166
307.0	199
311.0	097 & 0141
311.5	0203
313.0	011 & 0197
313.5	0127

propagation

by Ron Ham
Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

From Edinburgh, **Ron Livesey**, using projection apparatus, identified 4 active areas on the sun's disc on April 3, 4, 15, 16 & 24; 5 on days 18 & 19; 6 on the 21st, 24th & 26th and 7 on the 2nd & 25th. At his observatory in Sevenoaks, **Cmdr Henry Hatfield** located one sunspot group, 12 filaments, 9 small quiescent prominences and an active area nearly flaring, in the eastern hemisphere at 1407 on May 6. Henry's radio telescopes recorded 'on the stops' bursts of solar noise at 136 and 1297MHz on the 8th. In Bristol, **Ted Waring** counted 17 sunspots on May 5; 12 on the 19th and 20 on the 22nd.

After finding an almost complete absence of 28MHz beacons on May 20, **Ford White** (Portland) checked the sun and saw a large sunspot on the central meridian which was no doubt the cause. He then followed its progress daily until it left the disc on the 26th. **Patrick Moore** (Selsey) also kept watch on this spot and kindly sent a drawing, **Fig. 1**, which he made from his solar projection screen at 0935 on the 24th. **Fred Pallant** (Storrington) found h.f. propagation "ugh!" on April 30 and May 2 & 20. He reported a high noise level with several loud bursts at 0900 on the 2nd and because the bands were so dead on the 20th he checked that his antenna was connected.

	April					May																								
Beacon	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
DF0AAB		X							X					X	X				X	X							X	X		X
DK0TEN																			X	X			X					X		
DL0IGI		X							X	X		X		X					X	X		X	X	X			X	X		X
EA3JA						X			X	X	X												X							
HG5GEW																										X				
IY4M				X		X		X		X	X	X		X		X		X	X	X			X	X	X		X	X		X
KA1NSV			X																	X	X	X		X						
KD4EC				X								X								X		X								
KF4MS																						X								
KJ4X											X										X									
LA5TEN		X								X	X	X		X					X				X	X	X	X		X	X	
OK0EG									X		X	X				X			X	X		X	X		X	X	X	X	X	X
OH2TEN	X	X							X		X	X		X			X			X	X	X	X	X	X	X				X
PT7BCN		X	X	X	X	X	X	X	X		X	X		X		X					X	X	X			X	X			X
PY2AMI		X	X	X	X	X	X	X	X		X	X		X					X	X	X	X	X	X		X	X			X
SK5TEN	X	X				X				X	X	X		X			X		X	X			X	X		X	X	X	X	X
VE3TEN																								X						
VK2RSY		X		X	X	X			X		X												X							
VK6RWA		X				X															X		X			X				
VK8VF		X		X	X	X		X	X			X								X	X		X							
WA4DJS			X	X						X	X	X								X	X	X			X	X		X		X
W3VD										X																				
ZS5VHF										X	X																			
ZS6PW																										X				
Z21ANB	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X	X	X		X	X			
5B4CY	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X				

Fig. 2.

Aurora

Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received reports of 'active aurora' up to 90 for the overnight period on April 19 and 'glows' on the 24th from the Kirkwall Met Office and 'active aurora' on the 2nd and 3rd and 'corona 2/3 sky' on the 5th from Jay Brausch in North Dakota.

Auroral reflected radio signals from the Lerwick beacon, GB3LER on 144MHz, were received by **Doug Smillie** (Wishaw) at 1720 on the 3rd and 1414 on the 18th. Tone-A signals were detected in the h.f. bands by **Tony Hopwood** (Upton-on-Severn) from 2030 to 2130 on May 9 and 2015 to 2100 on the 29th. **Gordon Foote** (Didcot) heard the German beacon, DK0WCY, (10.144MHz) send weak auroral warnings on May 14, 15, 23 & 24. Fred Pallant heard 'rough' and 'raspy' tones from the beacons Z21ANB early on the 4th, SK5TEN at 1025 on April 27, 0812 on May 5 and 1836 on the 23rd and GB3RAL at 1021 on April 28, 0900 on May 9 and 1710 on the 10th. Auroral reflected television pictures were seen in Bands I and III on May 10 by **Simon Hamer**.

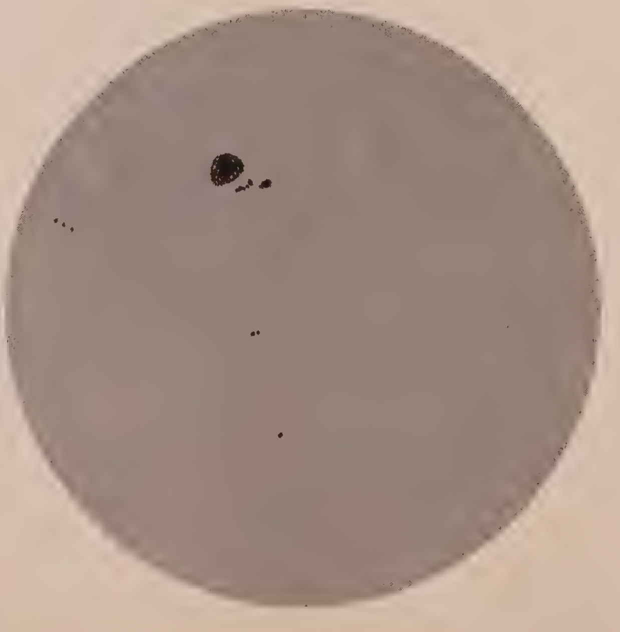


Fig. 1.

Magnetic

Although there were no magnetic storms recorded during April, the magnetometers used by Tony Hopwood, **Karl Lewis** (Saltash), Ron Livesey and Doug Smillie were unsettled on days 3, 5, 6, 8-10, 17-23 inclusive and 26, 27 & 29. In May Tony Hopwood recorded storm conditions on the 8th and 9th and disturbed conditions on days 4, 7, 10, 22, 23 and 29.

Propagation Beacons

First, my thanks to Gordon Foote, **Richard Gosnell** (Swindon), Henry Hatfield, **Ted Owen** (Maldon), Fred Pallant, Ted Waring and Ford White for their 28MHz beacon logs which enabled me to prepare a chart, **Fig. 2** showing their combined efforts. Henry Hatfield found EA3JA 'very loud' on May 1, Gordon Foote said that LA5TEN, OH2TEN and SK5TEN "sounded almost next door" on the 18th and Fred Pallant copied very strong signals at times from DK0TEN on the 15th and 23rd.

For nearly a year Ford White has heard a beacon like signal on 28.205MHz which only seems to appear when sunspots or aurora are about. For instance, he copied it during the morning of last November 9 following an aurora that stretched from Bristol to Shetland overnight. "It is very hard to read," said Ford who reckons it could be FUHKEK or FU5KEAA. He last heard it on March 25 and May 7, 14 and 18.

Sporadic-E

At 2002 on May 21, Richard Gosnell heard an Arabic news bulletin on 87.5MHz, "fading at times into a pop music programme", but twice mentioning a town, Djedida, in Tunisia. He heard classical music on 69.8 & 70.3MHz at 1630 on the 23rd and Arabic music with a French commentary on 88MHz plus frequent Italian 'non-stop pop' around 87.5MHz on the 29th. Richard says that the Sony ICF-PRO80 receiver, "is fun for spotting the stronger band openings when away from base." The set is portable, has 40 memories and with a choice of a.m., s.s.b. or n.f.m. modes over the range 25 to 54MHz it sounds a useful tool for the study of auroral and Sporadic-E propagation.

Sporadic-E disturbances to Band I and the atmospheric pressure chart covering this particular period can be seen in my television column elsewhere in this issue.

Tropospheric

While on holiday in Cornwall on May 6 & 7, **S.M. Hockenhull**, using a Philips D2345 portable with its own rod antenna, logged BBC Radios 1, 2, 3 & 4 from Rowridge, Radio 4 from Haverfordwest & Les Platons and Radio Solent. These were, "competing with 20 very powerful signals from French stations," he said.

I found French and German stations, plus a very strong signal from BBC Radio Oxford in Band II around 0830 on the 17th.

"I have not seen the radio band so jammed with European stations for many a long time," wrote **George Garden** about the opening on the 16th & 17th. He caught the first indication of a lift to Europe when a German station came up on his car-radio while he was driving between Montrose and Inverbervie. At 1700 on the 23rd, George, again using his Sharp car-radio high on Cairn O'Mounth, added two new stations to his growing Band II log. The first was Radio Cracker (Edinburgh) around 102MHz and the second was Radio Clyde FM on 102.5MHz. Between these he heard someone talking about events in Lincolnshire, so, before leaving the site he patiently waited for the announcer to confirm that it was Lincs FM. This was of particular interest to George because the Lincs FM transmitter was at the southern end of a fog belt which extended along the East Coast.

Simon Hamer (New Radnor) received signals in Band II from Germany and Scandinavia on the 24th.

A Great Loss

I regret to report that Doug Smillie passed away unexpectedly during May. His consistent reports on auroral and magnetic events will be missed by all who read my columns. Doug's dedicated work in this field will be a great loss to both the astronomical and radio fraternities alike. We extend our deepest sympathy to his family and many friends.

ssb utility listening

Peter Rouse GU1DKD, Barcroft, Rohais de Bas, St Andrews, Guernsey, C.I.

At long last I am back. I can tell you now that the mystery virus turned out to be Leukaemia and five months in hospital in the UK was no fun for me or my family back in Guernsey. However, all is now well and thank you for the letters and cards wishing me a speedy recovery. The biggest thank you must go to Graham Tanner who stepped in at very short notice and not only kept the column going splendidly but managed to retain the same style. Graham has promised to write the occasional special article for *SWM* from time to time so we will not be losing his talents.

I thought I was going to be in for some fairly intensive listening whilst in hospital and armed myself with my trusty Philips D2935 portable and a length of wire that I could drop out of a window or string to the nearest drip stand. Fine in theory but not in practice because modern hospitals are full of so much equipment throwing out hash that short wave listening is a non starter. Anyway, the receiver did manage to pick up Radio Guernsey on medium wave so at least I was able to keep up with the news back home.

More on Antennas

Anyway, down to the nitty gritty and like myself Graham's mailbag consisted of a lot of letters asking about the best antenna for general listening. Both he and I have extolled the virtues of the G5RV as a good all round, inexpensive option. However, not everyone has room for this antenna and in many instances readers may be not be able to use more than about twenty or thirty feet of long wire. There are two particular problems with the long wire: If you run it straight into the house and feed the high impedance socket on the receiver you are almost certainly inviting problems with pick-up of interference from thermostats, electric motors and micro-based devices (these days that includes computers and central heating, washing machine and cooker controllers). If you try to overcome that problem by feeding the antenna via screened coaxial cable you run into the second problem and that is coupling of balanced to unbalanced devices and impedance mismatches. One device that claims to overcome this is known as a magnetic long wire balun and it is being imported by Lowe Electronics. Apart from providing a proper match between antenna and standard 50Ω coaxial cable it also drains any static build-up on the antenna down to ground. That not only helps to protect the receiver but should also mean less noise. I have been given one of these devices to try and will report the results in due course.

I managed to get to the Elvaston Rally in June and spoke to John Wilson from Lowe about various new products. I was surprised to hear that their HF-150 receiver is virtually commanding black market prices in places like Germany. This little receiver has few controls and switches but quite stunning performance for its price and size and at the moment the sub-contractors who make them for Lowe cannot turn them out fast enough. There's been such a shortage that some enterprising continentals have actually been bringing cars over to the UK, filling up the boot with sets and taking them back to sell.

Logs. What Logs?

Because of the change over back to your's truly I have only got one set of logs. Guess who they are from. Yes, the man who knows what's going to happen even before it happens: **Paul H.** of Newbury. Paul has found a new USAF channel in use in Europe during the evenings. It is channel A-9 on 4.612MHz. Paul say's it's not part of the usual 'Cemetery' net but is an 'Inform' network channel. So far he has heard little of interest on the channel but I suggest all you USAF watchers keep a check on this one as people do not set up new channels for nothing.

Paul's log consists of two Australian Air Force channels. He heard Air Force 10 working Air Force Sydney on 8.975MHz and the same aircraft working a warship on 13.207MHz. New York Radio was heard working NAT-tracks on 13.354 and 'Spar 65' (a C-20 aircraft) working Andrews Air Force base. Several airline message services were heard including El-Al on 13.304MHz, American Airlines with Stockholm on 13.9425, Alia Amman with a Royal Jordanian flight on 13.255 and Saudia Air on 11.288MHz. There was the usual stack of USAF traffic including SAM 201 on 11.153, Elmendorf Air Force Base (Alaska) on 13.201, SPAR 60 (Boeing 707) and SAM 86971 on 11.226 and SAMs 26000 and 30500 and SPAR 64 all in Russia with with James Baker on 23.035MHz. RAF Boulmer were heard setting up an air defence network on 8.992MHz and NASA Shuttle-comms relays were heard on 21.395MHz via WA3NAN. Paul also heard traffic on several US Navy channels including 4.711, 6.720, 6.723 and 8.972MHz.

You may recall that prior to my sudden departure I queried the expression 'Alligator Playground' and wondered if it was an exercise area. Paul believes the expression actually refers to both the UK and US Naval Tactical Data System as part of NATO operations. The expression simply refers to all the stations that are on the net at any given time. Paul also adds another snippet about NUCO which is heard on RAF defence nets. He believes it means NATO code for uniform operations and indicates that a message is about to be encrypted. un-NUCO ends the message and returns to traffic in the clear.

Paul has also asked about any h.f. communications used by Channel Islands Air Search who received publicity recently in *Aviation News*. As someone who has been actively involved in both advising and installing equipment for CIAS I can tell you that no h.f. is used. However, for anyone who is interested let me say that I hope to do a separate article for *SWM* on CIAS later this year. They currently operate a Piper Aztec but this is being upgraded to a BN Islander which will have better radar, radio homing equipment and survival gear which can be dropped to casualties. Radio equipment covers all civilian aviation frequencies and marine channels. CIAS is funded and manned entirely by volunteer pilots (most are professionals) and observers. In Europe such a search and rescue organisation is quite rare (possibly unique) but in America there is an organisation known as the Civil Air Patrol which does use h.f. I confess that I have never heard them although according to some American magazines they are quite active. They often use USAF frequencies although I do hope in the near future to produce a small list of unique CAP frequencies. Meanwhile if anyone has logged any CAP operations I would be interested to hear from them particularly if they can give some indication of what type of callsign formats are used.

Watch this Space

Coming up in the near future I will be looking at the NOAA hurricane hunters again now that we are approaching the hurricane season in the Caribbean. I shall soon take a look at Antarctic operations as well because the spring starts down there in November and there's usually a flurry of activity as the supply ships start to reach the bases after the long winter. Any comments or contributions on the above will be gratefully received.

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bandscan

America

Gerry Dexter

The arrival of a new station from a country never represented on short wave before is always an exciting time for DXers. Never mind that the arrival was expected, the hunt is immediately on! So it was with Palau (Belau), an island in the western Pacific Ocean and one of those administered by the United States as part of the US Trust Territory of the Pacific Islands.

The station is the Voice of Hope - Asia operated by High Adventure Ministries (KVOH and the 'Hope' stations in Lebanon) that just came on the air in May, initially with religious music and identification announcements, though full programming should surely by underway by now. The 100kW station uses the call KHBN and is scheduled from 2000 to 0800 on 11.980 and 0800 to 1600 on 9.830MHz. English broadcasts will run between 0300 and 0800 with all other hours in Chinese. There's a choice of two addresses for reception reports: PO Box 93937, Los Angeles, CA 90093, USA or PO Box 66, Koror, Palau 96940.

WJCR Now on the Air

WJCR, mentioned last time in the 'yet to be' category is now on the air from the small town of Upton, Kentucky, south of Louisville. WJCR's programming runs 24 hours per day, beamed to Europe and Latin America, with most of it gospel music. The frequencies in use are 7.490MHz (that could change to 7.485MHz) and 15.660MHz. A second 100kW unit should be on the air soon, if it isn't already, giving the station two active frequencies at the same time. The stations verifies with a QSL card and form letter. Upton's population is only around 500 persons ('a wide spot in the road' as we say here) so the only address needed is: WJCR, Upton, KY 42784, USA.

Offbeat Programmes

WRNO, WWCR and WHRI carry a number of independently produced anti-Cuban, pro-Croatia, anti this, anti that programmes. There are two fairly new ones that are a bit more unusual that the others and worth a listen, just for curiosity's sake. Radio 16th of December is a feature said to be produced at the Haitian embassy in Washington. It is aired via WHRI Mondays - Fridays at 2100-2300 on 17.830MHz, Sundays 1100-1300 on 9.85MHz, all in Creole, supporting the ousted Haitian government. This is another of the programmes placed by Radio Miami International and RMI will handle reception reports. RMI's address is PO Box 521733, Miami, FL 33152, USA. This programmes would likely go off the air in the event the elected president of Haiti is returned to power.

Another, more ominous programme is National Vanguard Radio being aired over WRNO on 7.355MHz at 0100-0130 Mondays, and possibly other days, too, as yet not monitored.

This programme takes a very racist tone and is apparently connected with National Vanguard Books, which sells books and literature along those tines. Further, it seems to have close ties with the infamous US quasi-pirate, quasi-clandestine station the Voice of Tomorrow which makes two or three broadcasts per year. One US DXer says he believes the announcer on Vanguard - who identifies himself as Kevin Alford Strong - is the same as the one on the Voice of Tomorrow. They announce an address of PO Box 90, Hillsboro, WV 24946, USA. WRNO airs a disclaimer after the programme concludes.

1 EUROPA
2 ORIENTE MEDIO
3 MAGREB
4 AFRICA
5 AMERICA SUR
6 AMERICA CENTRO
7 AMERICA NORTE
8 AUSTRALIA
9 JAPON
10 FILIPINAS
ZONAS DE COBERTURA
1
2
3
4
7
8
9
10
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Radio Exterior de Espana should soon have its Costa Rica relay station on the air.

the
Voice of To-morrow
Transmitter Baltimore, MD 2 kW
Studios located in Providence, RI

The racist pirate broadcaster Voice of Tomorrow seems to be connected with National Vanguard Radio, being aired over WRNO.

Costa Rica

Adventist World Radio has begun to air test broadcasts from the transmitters it purchased from the now defunct Radio Impacto. The frequency 6.150MHz has been used already and 5.030MHz will air in the future. In addition, the transmitter you hear on 9.725MHz will eventually move to the 'Impacto' site. All of which would mean better reception on a greater choice of frequencies.

Radio Universidad de Costa Rica is one of those stations that seem to be active on short wave for a time, then vanish for a period of months, or even years. At present the station is active and several DXers have had logs of this one during recent months - on the station's usual frequency of 6.105MHz. There seems to be very little talk, however, The programming segments include opera, classical and music from the 1940s. The station leaves the air at 0404, but starts its sign off procedure at 0400.

TIFC, Faro del Caribe, is currently being well heard with its English language segment at 0300 on 5.055MHz.

And, still we wait for the arrival of Radio Exterior de Espana's new Costa Rican relay station, designed to improve REE's coverage in the Americas, even though it has provided fine signals all along. Once this gets going we can look for programmes from Radio Nacional de Costa Rica via this facility.

Caribbean

A reactivated station from the Dominican Republic is Radio Santiago, listed for 9.778MHz but heard lately about 100kHz higher. The station, located in the city of the same name, announces itself (in English) "This is Radio Santiago, International Wave, 9875 in the 31 metre band". (The frequency is actually 9.878MHz.) It's being heard in the evenings in North America (around 0300UTC). Reception reports are requested to PO Box 282, Santiago, Dominican Republic. Can't but wonder if this station is the same as the Radio Santiago that was active back in the 1950s, using 6.075MHz.

Chile & Uruguay

Some North American DXers have been taking logs on a couple of seldom heard Chilean stations. Radio Santa Maria, at Coyhaique can be heard with some struggle (but more easily when co-channel Radio Globo, Brazil is silent) on 6.030 or just a shade below at around 0000. An even worse interference problem is Radio Marti, which also uses 6.030MHz. In the same time frame Radio Esperanza, 6.088MHz, has also shown but with a goodly amount of QRM involved here, too. It is normally a struggle to hear either of these fairly rare stations.

Not yet reported by North American monitors is a still relatively new Uruguayan station, Radio Integracion Americana - although it has been heard in past years under other names. This station uses 6.045MHz to sign off at 0059. Its address is Eduardo Acevedo 1464, Piso 9, Montevideo, Uruguay.

Also Noted

Suriname is a fairly difficult country to log, even for us in North America. A few DXers have been lucky enough to pull in Radio Apinte on 5.005MHz (actually varying almost to 5.006MHz) at around 0400, with a station identification in English at 0402UTC. The Surinam government station is no longer on short wave.

Radio Canada International is airing a segment produced by the Canadian Forces Network for Canadian military personnel serving in the crisis area that used to be Yugoslavia. It's certainly a temporary thing and may even be off the air by now. It's scheduled Monday through Friday between 1900 and 1930 (in French & English) on 5.995, 7.235, 13.650, 15.325, 17.875 & 21.675MHz. The English segment airs from 1908 to 1914, French at 1922 to 1928UTC.

Former El Salvador clandestine station Radio Farabundo Marti, mentioned last time, is to use f.m. only. It will operate from San Salvador on 102.1 and in other towns on 97.7, 92.5 and 91.7 using the callsign YSFF. Radio Venceremos continues to be active on short wave, though it has moved from the 6.750MHz area back to 6.320MHz (sometimes heard on 6.300MHz).

That's my story for this time but I hope you'll join me again in three months for another Bandscan America!

satellite tv news

Roger Bunney, 33 Cherville Street,
Romsey, Hants SO51 8FB

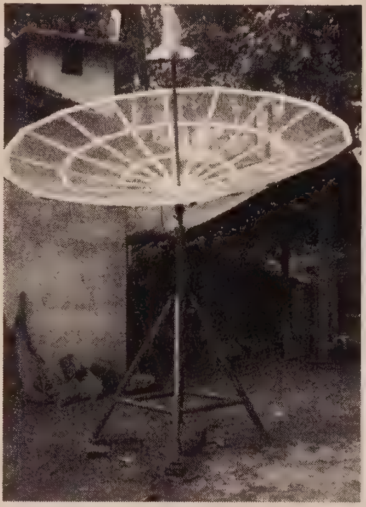

Fig. 1: The 714MHz receiving dish for the Russian/CIS Orbita III service constructed by Bandula Gunasekera, Colombo. Note that it points almost directly upwards compared to the UK where dishes are at about 30° elevation!

We'are accustomed to hearing about satellite television at Ku band (10.9-11.7GHz) and continuing into the DBS band through to 12.5GHz. Less perhaps with C Band (3.65-4.2GHz) which generally requires a large dish and is the traditional telecommunications band. TV and u.h.f. generally relates to domestic (terrestrial) TV from the local services and of course TVDXing. Very few realise that u.h.f. is also utilised for satellite television!

Back in 1975/6 NASA conducted their SITE experiment using the ATS-6 satellite, an attempt to prove (which it did) that inexpensive satellite TV would provide a mass audience in developing countries for education, instruction and entertainment. ATS-6 operated at 860MHz and transmitted from an orbital slot at 35°E, sufficient to give line of sight into the UK and although a long way off of main boresight (the main footprint was centred into India) stray or side lobe radiation was enough to provide reasonable quality pictures for TVDXers. That was 17 years ago.

Also in 1976 the ITU granted several certain frequencies for u.h.f. satellite TV and the Russians entered early DBS (direct broadcast by satellite) using 714MHz (approx. Ch. 51 u.h.f.) with a powerful single channel satellite known as EKRAN. The purpose of EKRAN was (and still is) to provide the Central Television main channel inexpensively to the frozen wastes of Siberia and Northern Russia sufficient to allow communal or single home reception on simple equipment. In fact the coverage footprint covered virtually all of the Northern Hemisphere as seen from 99°E, extending down into India, Sri Lanka and somewhat weaker into South Africa.

The typical EKRAN satellite operates for about 2 years running a 200W klystron into a helical bed frame looking antenna producing a 57dBW signal right hand circular. A couple of years ago a 2nd service was received by Indian TVDXers at 754MHz (Ch. 54), a similar programme to the 714MHz offering but with a 3 hour time shift, it being suspected the 754MHz transmissions were directed more towards the Russian Far Eastern region bordering the Pacific. The 714MHz programme is known as Orbita III and whilst operating (it now being off the air) the 754MHz as Orbita II. These unique transmissions were well over the European horizon and out of UK reception scope, though they have been received in Istanbul and by a TVDXer in Finland.

The significance of the above dialogue comes in a letter from **Bindu Pakadi** from Banglaore, India. He writes that an Indian company called 'PTI-TV' (Press Trust of India) have leased a 99°E Ekran transponder and in July will commence test transmissions leading to a 6 hours per day service in August in English, Hindi, Bengali and Malayalam - the latter the main language of the South Indian State of Kerala. Many Malayalans work in the Gulf region and the service area of an Ekran covers all of this region. It's anticipated the service will operate at 754MHz. The Indian government has been complaining about the proposed Hindi language service via AsiaSat 1 (Star TV) at C Band but its possible that Star TV may now be concerned if a rival (and cheap to receive) popular service starts at u.h.f. Obviously u.h.f. antennas are cheaper/simpler to produce than C Band and a u.h.f. outboard tuner unit with f.m. video demod is cheap to produce in quantity. An interesting development, stay tuned for developments....

Odd to relate that reader **Bindula Gunasekera** from Colombo, Sri Lanka dropped a line to describe his own equipment - home-built - for both EKRAN and C Band, based around dishes and even on a relatively small dish, picture quality is high from EKRAN. The photograph shows the dish, right hand helical probe + head pre-amp housing and the Russian (CIS) test card indicates the picture quality.

If you're into fluent French and satellites then there is a club just for you, the Satellite TV Club (reception individuelle des TV mondiales via satellites) and address is Place de Monds, 33360 CENAC, France. Annual membership is 120 Francs, further details include return postage, say 4 Francs.

Orbital Sightings

Ian Waller (Lincoln Satellite) sent in an excellent photograph of the WTN feed out of Rio during the Earth Summit talks in June, this was logged in C Band at 4.18GHz left hand over Intelsat 515 18°W. With the opening of the Portuguese RTP Internacional TV service on Eutelsat II F3 16°, the service is also carried on Russian Gorizont 12 at 40°E along with TV5 Europe, CNNI and Russian/CIS Channel 1.

Des Sherwell near Maidenhead noticed that signals from IRIB, Iran on Intelsat 602 63°E (well down on the UK horizon) suddenly increased in signal strength during the 1st week of June giving entertainment quality signals on a 1m dish. At such a low elevation signals are prone to rain fade due to the longer tropospheric path the signals travel than if directly above.

Berry Habekotte, Holland using his 900mm dish received the first ARTE programme over Kopernikus (DFS-1 23°E) May 30 ARTE is the French/German originated programme that likely to use the currently defunct La Cinq French network from September.

On a personal note I suddenly find myself 'retired' rather earlier than anticipated and experiencing the (lack of) benefits from joining the DEP club - but this has allowed me for the first time in many years the ability to 'tune up' in the daytime - and what a wealth of signals there are to be received during this period.

Brewster, Washington State is a small town in the Rockies - in the middle of nowhere it seems looking at the map, well it does sport her own Satellite Earth station as the Brewster E/S test pattern was received May 19 at 1000 over the Brightstar NTSC (System M) feed on Intelsat VI F3 - out of curiosity I've written to the Brewster E/S to ask about themselves.

A splendid outside broadcast in true traditions for Canal Plus was transmitted via the Starbird OB service on June 7 from Plymouth Sound, shots of cliffs, the sea, yachts, an old castle building, sparkling sea in a rocky cove, shots from an overhead helicopter - of course all in French as indicated from the colour bars ident - 'Plymouth Europe 1 Star Canal +'. This over Eutelsat II F1 12.52GHz.

The recent football matches in Sweden have gained bad press, unusually the ITV Sport UK feed was linked via Intelsat VI f3 11.49GHz horizontal rather than Eutelsat. If you have the opportunity of monitoring a UK bound feed that is actually terrestrially live in the UK listen to the echo time delay between the incoming satellite feed and the local u.h.f. off-air signal.

Orbital Slot News

Bad news for Filmnet movie buffs that have invested into pirate decoders, both transponders 11 and 23 on Astra 1A, 1B will go to D2MAC from August 24 with only transponder 11 continuing in D2MAC from August 31.

Heavy talks at the Australian Broadcasting Commission (ABC) in their consideration of how to fund an ABC TV Asian service over Palapa B2P. The cost of a revamped domestic ABC service for a 6-7 hour day will be A$2 million and for a custom tailored service with regional news up to A$20 million - which would need government funding. Discussions have been held with another mainland broadcaster SBS-TV and if the service should be commercial or subscription (or a mix). With the BBC TV World Service beaming into South East Asia from AsiaSat 1 (Star TV) and other countries planning services across that region, Australia is, in effect, being pushed into providing a service or being left far behind.

One development that Australia is well aware of comes from Indonesia, who has now confirmed orders with International Technologies Inc. for the first (of 4) small satellites that will provide television and radio programming available to rural and remote areas cheaply using both standard (analogue) and the digital compression techniques. By using digital compression within L Band (Radio) and S Band (TV) up to 4 TV channels can be squeezed into the space of a single traditional analogue TV channel. Indostar 1 will have 2 analogue (FM) TV channels and 8 digitally compressed TV channels, and with up to 8 digital radio channels (DAB). TV will appear in S Band (2.52-2.67GHz) and L Band radio (1.46-1.492GHz). At the same time development plans are proceeding for 2 types of low cost TV receivers, one for analogue and the other digital. The service is planned to start January 1995.

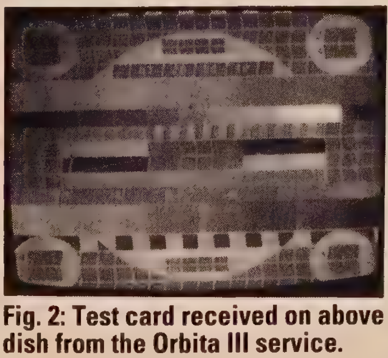

Fig. 2: Test card received on above dish from the Orbita III service.

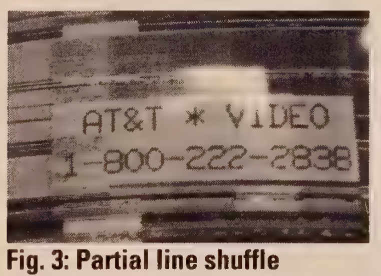

Fig. 3: Partial line shuffle scrambling on Eutelsat II F3 11.59GHz -, note window reflection!

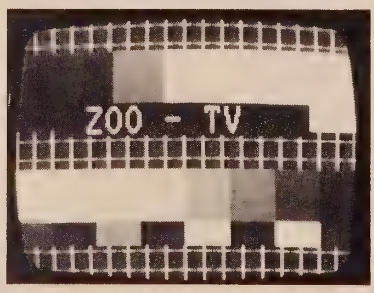

Fig. 4: 'ZOO TV', this mystery test card turned out to be an international feed from the pop group U2 during their UK tour.

amateur bands round-up

Paul Essery GW3KFE, PO Box 4, Newtown, Powys SY16 1ZZ

G4ZVJ writes to mention that he will be in American Samoa as KH8/G4ZVJ between August 26 and September 2, and, possibly, from 5W1VJ for a short period. All QSLs and s.w.l. Reports will be answered via: Andy Chadwick G4ZVJ, 3 Park Villas, Cheadle, Stoke-on-Trent ST10 1HZ.

Letters

Nice to hear again from **Ron Pearce** in Bungay, Suffolk; Ron's latest 'special' is a one-transistor and earpiece receiver with which he tried 14MHz sideband. After about 1.75 hours of construction work, the receiver was buckled to an old Joystick and promptly produced VK5AFA, VE1YX, W5KNK, PA2PQ, VE3RM, VE3ULT, PY5QBU and the 4J1FS Malyj-Vyotskij DXpedition which is 'wrapping-up' as these lines are being written. As the little beastie covers Top Band to Ten we are promised some lists to show just what can be done.

Simple gear is also a 'thing' with **Eric Masters** in Worcester Park Surrey, who listens on 7MHz c.w. with a Lake DTR7. It seems the UK and IARU Field Day yielded Eric quite a lot of signals, with EI5DR filling a long-time gap in the list, F5BM, F6EZV, FD1PQE, various Gs, DJ5CU, DL1BL, DL2IAD, DL4SCH, DL8FCX, Y41HL, YL2KJ, YO4RDW to fill another gap, YU1AVQ, YU3CAB, OG3OJ, OK1AVG, ON4AGL/P, ON4AGZ/P, ON4AUZ, ON4DST/P, ON4VM, ON6MS/P, ON6SI/P, OR0OST & UA9CM.

Gerald Bramwell, of Manchester, has beaten his c.w. reader into good manners, so a larger proportion of the signals this time are from the key. On Top Band we find (s.s.b.) YL2GUY, UB4MSF, RB4MCI, PA3DEW, GW0JUJ, GM3OXU, ON5CD (c.w.), YL2PQ, LY7A, UZ3AWD, 4J1FS, PA0AUV, PA3GCU, G3KNW, G3TPW, G0OPB, GB6MX, Y42DK, F6AUS, GW3DRV, G4DBN, DJ9IE, PI4ZLD & 4N2X. 3.5MHz stumped up with sideband signals from TA4A, ZC4DG, VK3DZM, PT7BSH, VK5RQ, 4X6ZK, 7P8DX, PT7BZ, VK5HB, 4J1FS (M-V Island), plus oodles of Europeans and Russian signals. On 7MHz we begin to see the green ink for RTTY; G3NBY & G3NXQ, plus c.w. from 4J1FS, YL2PQ, OZ7YY, G0HGA, G4HEB, GM3HBN, Y23RJ, G3BWR, I4XAM, LB8ZD, CX4SB, OA1DFM, LU4ASE, plus sideband from ZS6IR, EA8BYL, HF0POL, CN8NS, 9J2SZ, CX5TV, CX1TE, LU5GO, PY7XC, 4X1IL, 9K2HA/M, 9K2HF, FM5WE, PR7MH, PR7FB and lots of smaller fry. Turning to 14MHz one finds sideband from JA7HMZ, JA9IPF, LU7BQ, LU1ALF, 9K2MC, YV5ENI, CE3HA, 9K2MU, JA1JAN, EA8NQ, LU9HKK, 9Y4H, LU5DL, east coast Ws and VEs aplenty, with c.w. from W3BFH, EA1AK/EA8 and Europeans, and RTTY booked in from W4JXM, UO5OIN, YL2KF, IK2JES, AM6ABL, EA1EBB, SP9AGV, 8P6SM, FG4FI and lots of nearer stuff in all three modes. Coming to 18MHz there is sideband from W6DMJ and lots of East Coast W/VE, 4J1FS, OY1A, 7X2DG, VU2RX, PY4OY, PT7BZ, JF7DZA, VP9HE, JR2LJO, PJ8AD, EA8BGY, JH1EDB, while the keybashers are represented by W9KIA, WE1BB, 4J1FS, EA6/DJ8VG/P, OK3CPC, and of course the various minor actors. 21MHz seems to have been the flavour of the month; the teleprinting types like WB2RAJ, N4JTP, NT3B, K0RC, W6RSZ, WB8C, N2LT, N4LIH, AM92EL, G0VWS, A45ZX, EA4XQ/5, 8P6SM; ZA1TAG and PY1DEA on the key, plus sidebanders such as umpteen W/VEs, Europeans, YV2EMR, KC1WJ/P/C6A, ZS1DX, J28GG, PJ9EE, HI8FHD, V44NK, AM8TE, JS6GIM, JA4TXW, EA8AOQ, WP4AFA, CP8AK, HK6QJN, LU1QCE, TR8JWH, 4Z5BW, 4Z5BW, HL1LVA, CX5CG, 7X2AJ, 7Q7JL, PY2BX, ZS6BJH, PT2JB, 5Z4FM, 4X6YY, ZP4AA, HK3OJY, AM8AMT, JN2WUZ, JE1VTZ, JA9IPF, PT7ZK, HS1BV, VU2TTC, PY1DEA, CE4JZO, 4X1NM, 4X6UU, JE1SGS, 5Z4BI, KP2AD, EA8FM, LU5EWO, PY5JA and the supporting cast. 24MHz c.w. offered AD6C and IK6BAK, and sideband from W/VE/VO, including W6SAI, UL7OBM, ZS1ATY, PW8EMU, KP2J, EA8AMT, PY2BAW & CM6LE. Finally 28MHz, where VE1PZ stands alone for N America, plus Europeans, ZS6AUH, AM8AKN, ZD7DP, LU2FJH, EA8UFC, LU5SBJ, CE3FB, CX7RM, LU7CK, PY1CAS, LU8VCC, WP4IVB & 7Q7XX. Quite a collection!

Vince Cutajar is in M'Scala, Malta, where he plays the WARC bands; so 18MHz gave T77T, OD5RF, FS/W1FC, YN1MF, YS1RRD, NP4TN, ZD8MS, S92QM, OJ0/SM0NZZ & OD5RAK; a switch to 24MHz produced OD5RF again, VO1XC, FS/W1FC, HH2PK, 4J1FS on M-V Island, TT8ZH, 3B8AD & S92QM.

Back in this country and the Isle of Sheppey, where **Ted Trowell** has a den. On 28MHz he logged all-c.w., with PY3CJI, TA7I, ZP6CW, TA2EC, PY2SHS, 7P8SR, PU2FDN & N9ND twice. 24MHz was used on 7Q7XX, while on 21MHz, we see EO8BED, LU1LHM, IL7/I0RKV, WB2TSL, W5/HK0BKX, TU4SR, VG1NH, WO8L, VP5/WB9HRO; and 18MHz managed VE2EXR, 3B8CF, UB9X/UB2KA, 4L3D, and SV0HS/SV5 twice. On 20m (14MHz) we find VG7FGE, and on 10MHz 9H3GQ & TA7A. UA0QFC fell in the bag on 7MHz, 80m was, as usual, skipped, and on Top Band came the only sideband logging, by way of ON7BW; c.w. noted HB0/DL6SDW/P & LY2BVJ.

Down west to Yeovil now, where **Don McLean** found conditions poorish. Starting on 28MHz, Don mentions BZ4RBD, CT3FT, HC7SK, LU3CQ/P for IOTA SA-055, JA4OK, JA5QJD, ON4AVO/5N0, VU2KFC, VU2VMI, XX9AW, ZD7SM, ZF2SD, ZP4AA, 5H3GM, 6T2YD/5A, 7Z1AB, 7P8DX 7P8EB & 9L1MR. The 24MHz scalps included A71BS, CM6LE, OD5RF, PZ1EL, UI8ZAC, VP2EOH, VP8CFM(S Sorkney), YB0WWL & 5N0HBK. The favourite band was 21MHz with A71BK, AH0M/W7 (Romeo of XY0RR fame in Reno, Nevada), BV4AO, CO2MA, CP5HG, DU1EIU, EM5T, EO8BED, FR/DJ8CR/G, FY5AN, G4SMC/8R1, GW3CCY/5N0, HC1EEV, HH2Z, HI6UD, HF0POL (S Shetland), HL2KAT, HL5JRS, HL9TK, HK3OJY, HZ1AB, HZ1TA, J73PP, JAs, JD1BFI (Minami Torishima), JX9EHA, JY3ZH, OD5ZZ, P29GC, RA0QD, RH0E, RL7PC, T20AA, TL8JWM, TU2JL, TZ6NU, UA0FF, UA0ICE, UA0KBY, UL8LWA, V44KAA, V85CJ, VKs, VU2DK, VU2JJQ, VU2OO, YI1RJ, ZF1DX, ZF2SD, ZP2AA, ZP8AA, 5H3GM, 5H3SW, 5Z4BI, 7Q7XX, 8J3ITU, 9K2JR, 9M2CW & 9M8BL. On 18MHz we see FF0XX and GM4JDS, while the 14MHz tally included EP2AG, IL/I0TWA, IV3VFR/IL3(IOTA EU130), S2/HA5BUS, VP8CGK (S Georgia), ZA1BM, 5H3DC, 9K2DT & 9M2SH.

Andrew Marriott in Bath stuck to the c.w. mode, and found VE7CC, W8/G0EOH, 4K4/UA6WCG, UH8BBZ on 21MHz, and on 18MHz 7P8RQ, 4J1FS, TM5CHA, W7MBJ in Nevada, leaving 28MHz for sweeping-up K5HYB in Arkansas, KD6WW, WA6UDR, KM6HV, ZA1SES & UF6FAL.

Up north of Wick is the home of **Don Robertson**, who also prefers the c.w. mode, though he does sometimes sample the delights of sideband. On 7MHz Don booked in 4J1FS & 9J2SZ; on 10MHz he sorted out YV5AZC, 3A/DF2UU, S79FI, 4J1FS, UA1RV/MM, UJ8KA, 4X4VF, RJ8JM. A flip of the switch to 14MHz and LU2AAW, V47GW, UA0ZCY, ZA1TRD, RA0AMT, UM8MZ, 4J1FS, 4K4BVI, PP2RR & 3X0HNU. The big list was on 18MHz where Don snapped up VU/VK2DXI, SV9/SV1AHH, 8Q7WP, FR5GG, UA0OGN, KP4YD, 9V1OK, 3D2QB, 4K2OLQ, AH6JF, EA9/DK7ZB, UA0ZC, UJ8KA, WH6ASW/KL7, ZL1MH, SV0HS/5X5, VP2EOH, 4K4/UA9OPA, RK9S, OZ1FJB/MM near 9V1, V85AA, KL7AF, RE5Q, VK7AAQ, LU1EN, VK4RF, UD8DWW, ZA1TAE, PY7DH, HL1LUX, 4U7ITU, UA0KCL, UB9X/UB2KA, 9V1OO, EH4MC, RI8BU, KH2FT & S79FI. 21MHz came up with UJ8KAC/RU9U, ZS70SAN, S79CK/D, UA0SQT, BV2TA, VP5P, TU4SR, CE3DNP, UM8QDX, RA0FN, UA0FZ, 4L6HMC, 9H3JR, ZY2YN, 7X2CR, VU2SQT, RV73SWB & KD6WW/C6A. There was only HZ1HZ on 24MHz, while 28MHz produced SV0HS/SV5, V85KX & UZ73WO.

Antenna

A BIG envelope with a USA postmark popped through my letterbox yesterday; when I opened it, it contains a book of reprints of articles on Aerials by 'Kurt N Sterba' and his XYL 'Lil Paddle'; these appeared originally in *Worldradio* magazine. Quite apart from the humour - somewhat sledge hammer to we G types(!) the main thrust is towards debunking the silly statements which appear in technical books and articles about antennas. For $12, including post and packing by Visa or Mastercard you get one of the best series of short articles on the subject that I have seen, with the chuckles thrown in for good measure - oh, and I suspect the front cover is a cartoon of Benjamin Franklin and the lightning. Letters to Worldradio, 2120 28th Street, Sacramento, CA 95818. No Mr Editor, you can't have my copy, I'll dine out on the jokes for months yet!

Deadline

To be serious once again, the address for all your letters is as above, and the deadline is Aug 7, Sept 4 & Oct 9.

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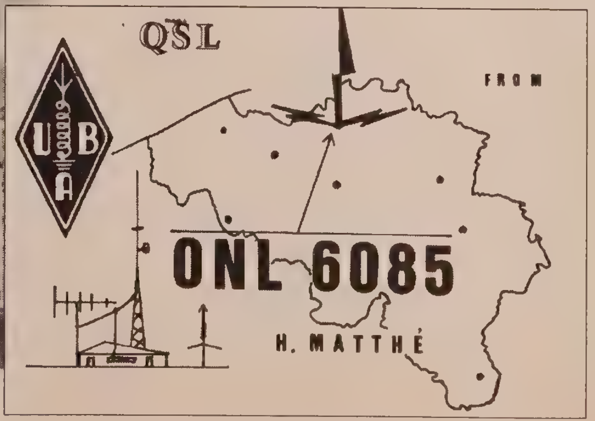

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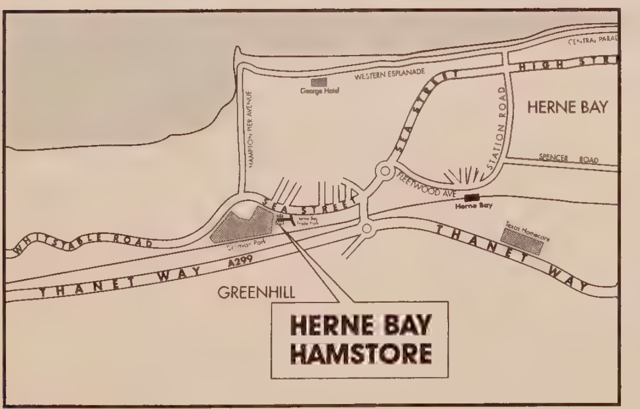
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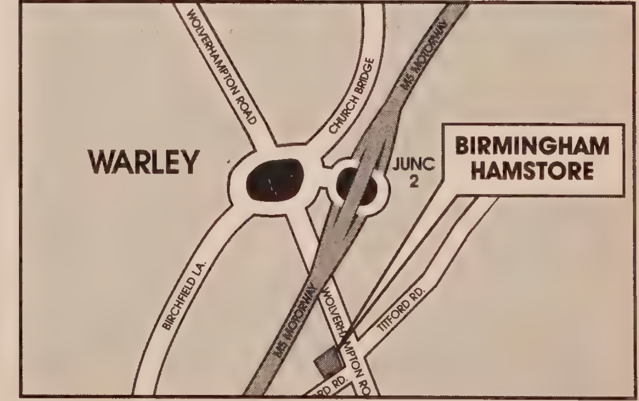
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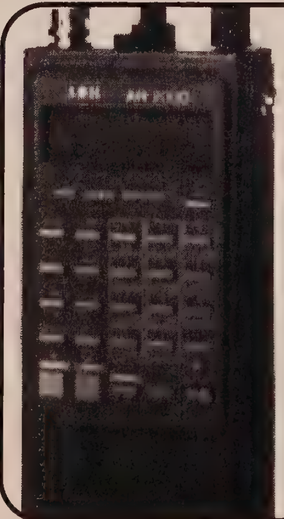

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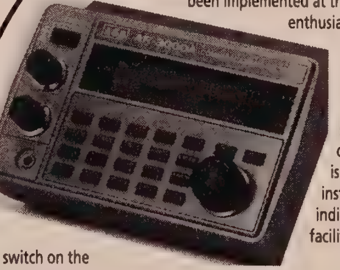

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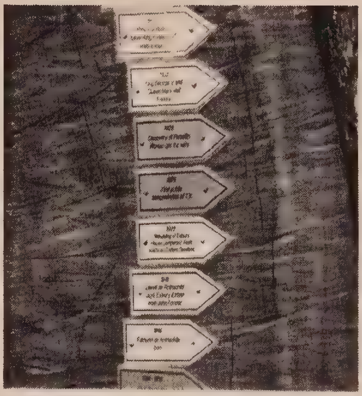

Fig. 1.

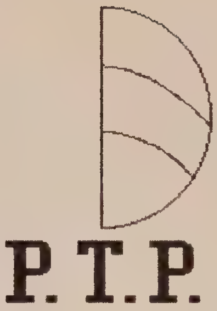

Fig. 2: Russia.

When Joan and I visited Exbury Gardens in the New Forest on May 20 our attention was drawn to a felled tree trunk sporting 51 plastic labels showing its size at the time of a particular historical event. For example, the centre label of the seven shown in **Fig. 1**, reads, "First public demonstration of TV 1926". Unfortunately this magnificent tree was toppled during the great storm early in 1990 and was probably weakened by the hurricane in October 1987. Television has come a long way since that first demonstration 66 years ago. However, although today it is a highly technical subject, with world-wide coverage, changes within the earth's complex atmosphere can cause it a lot of problems.

Band I

From Meerut, (India) **Lt. Col. Rana Roy** received signals from unidentified stations, around Ch.E2 (48.25MHz), from SE. Asia, via trans-equatorial-propagation (TEP), at 2100 on April 15 and 1700 on the 21st and 28th. **John Woodcock** (Basingstoke) logged pictures from Italy (RAI) at noon on May 5 and at 1535 on the 15th. He saw ice hockey from Estonia at 1530 on the 7th and watched their news at 1200 on the 9th and added Sweden (test-card & news), Spain (TVE1) and Portugal (RTP) on the 7th, 12th and 18th respectively.

During May, **Russ Burke** (Northampton), received pictures from Italy, (RAI-UNO) and Spain (TVE1 & 2) on days 2-4 & 11 and a test-card from Russia (CIS - Commonwealth of Independent States) on the 12th. I saw a fading WWII film around Ch.R2 (59.25MHz) toward the end of an opening at 1855 on the 18th, while earlier, at 1730, John Woodcock saw a film about the Battle of Britain from Estonia so I assume it was the same one.

Between 1130 and 1200 on the 21st, **Richard Bell** (Melton Mowbray), using a PYE99 receiver, Labgear pre-amp and a 3-element beam, received test-cards scribed '1SR-P' and 'SR1-TV Bratislavia' from Czechoslovakia. Later, at 1300, he saw commercials from 'RAI' and at 1928 he logged adverts from 'TVE1'. At 1550 on the 23rd, he watched a western film with 'TVE1' in the bottom right hand corner and during a session from 1100 to 1300 on the 25th, he noticed the letters U.K.T. and the figure '1' on the lower right of a weak picture plus a news programme with 'CST' (Czechoslovakia) and test-cards labelled '1SR-P' again and '1 PROGRAM/ODK3'. The dials on Richard's set are marked with the letters 'A', 'B' & 'C' for Band I and 'D' to 'H' for Band III.

David Glenday (Arbroath) received pictures, via Sporadic-E, from Czechoslovakia and Yugoslavia on the 9th, a music programme in SECAM colour from an ex-USSR station, with '1' logo, at 0810 on the 12th and Spain (TVE1) at 1715 on the 14th. Similar openings also proved rewarding for **Carl Bowen** (Strelley) and **Bob Brooks** (Great Sutton). Between them they logged test-cards and programmes from stations in Czechoslovakia, Finland (YLE), Italy, Poland (TVP), all Scandinavian countries, Spain and Russia (TSS). The TSS clock was seen by Richard Bell who also caught glimpses of a cartoon, motorcycle racing, a news-reader and saw the logos 'B', 'BECTN', 'P.T.P.' **Fig. 2**, and '2'. I used the Paint section of the Windows program on my Amstrad 2286/40 to reproduce the sketch in **Fig. 2**, from Richard's letter.

Among the Norwegian regionals seen by Carl and Bob were Bremanger, Gamlem, Hemnes, Melhus and Steigen. They both logged Denmark (DR) and Sweden (SVT Kanal 1) and Bob added cartoons from Italy and Spain, ice hockey from an unidentified source around Ch. E3 (55.25MHz) and the ident 'Bratislava'.

During Sporadic-E openings on the 24th, 25th & 31st, David Glenday received signals from Czechoslovakia, Germany (ARD1 & SWF1), Hungary (MTV1 Budapest), Italy and Spain and saw the captions 'BECTN' and 'OCTAHKIHO'.

During his extensive propagation studies **Richard Gosnell** (Swindon), received television signals from Czechoslovakia and Italy on the 23rd, Spain on the 13th, 21st & 30th and Scandinavia on the 18th. **Simon Hamer** (New Radnor) identified pictures from Austria (ORF1), Czechoslovakia, Denmark, Finland, Germany, Iceland (RUV), Italy, Norway (Greipstad), Portugal (RTP1), Russia (TSS), Sweden (SVT1), Switzerland (+PTT/SRG1) and Yugoslavia (JRT), at times while periods of Sporadic-E were in progress on days 6, 7, 9, 12, 14, 18, 21, 23 & 24.

Among the captions seen on test-cards or programmes by **Owen Jones** (Blurton) during the May events were 'Bratislava', 'Budapest', 'CNOPT' (sport), 'HOBOCTN' (news), 'NTA', 'NYLA', 'RAI-UNO', 'Sverige', 'TVE1', 'TVP1', 'TV2' and '1SR-P'. He also watched ice-hockey on the 7th and 9th, news and sport, on the 12th and 25th and cartoons on the 21st and 29th. Owen uses a Labgear converter and a home-brew antenna.

Satellite TV

A new logo from the Russian CIS, **Fig. 3**, was seen by Rana Roy, via satellite, on April 17 and he would like to know the source. He also saw an announcer, **Fig. 4** and a news title, **Fig. 5**, from the BBC's Asian service on March 18 and April 18 respectively. In Holland **Peter de Jong** received a range of international Idents, **Figs, 6, 7 & 8** from the satellite Eutelsat II on April 14, 16, 17 and on the 11th, he caught their logo, **Fig. 9**.

Weather Briefs

The slightly rounded variations in atmospheric pressure, **Fig.16**, for the period April 26 to May 25 were taken at, noon and midnight, from the barograph installed at my home in Sussex. In answer to a number of letters the special chart and ink for these instruments is usually obtainable from a good jeweller. Although some areas had heavy thunder storms in May the rainfall that I recorded was a mere 0.91in and most of that fell overnight on April 30/May 1.

"A brilliantly clear and cloudless day by 1100Z, as befits an anticyclone, but there was a biting ENE wind and a temperature of only 13°C. The North Sea had dampened and chilled the lowest levels of the air sweeping onshore into Essex and on down the English Channel," wrote Richard Gosnell about May 17, adding, while above the high-atmospheric pressure ensured warm and dry air. "The perfect combination for a duct," he said. As you will see in **Fig.16**, the pressure at my home had reached 30.5in (1032mb) on the 17th and starting to fall.

Tropospheric

You're dead right about that duct Richard, because at 0830 on the 17th I saw a cartoon from a German station in Band III and during the evening both the BBC and ITV told viewers that 'atmospheric conditions' were disturbing their pictures. On the 16th and 17th, David Glenday received pictures from Belgium (BRT1 & RTBF1), Denmark (DR), France (Canal+), Germany (ARD1) and Norway (NRK) in Band III and Belgium (BRT1 & 2, Canal+ Belgique & Tele21), Denmark (TV2), France (ANT.2, FR3 & TF1), Germany (HR3, MDR3, NDR3, RTL+, SAT1, SSVC, WSF3, WDR3 & ZDF), Holland (NED1, 2 & 3) and from English transmitters at Sudbury and Tacolneston on Bands IV and V.

John Woodcock logged a test-card from Holland (PTT-NED1) at 1035 on the 17th and later, between 2305 & 2330, he watched a chess match and their news.

"I anticipated quite rightly a good

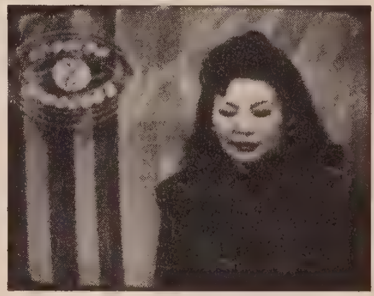

Fig. 3: Russia.

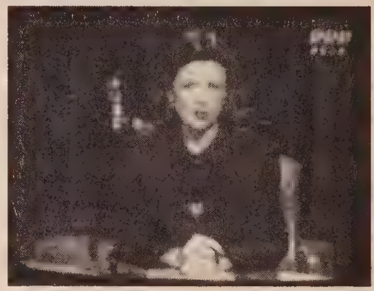

Fig. 4: BBC Asia Service.

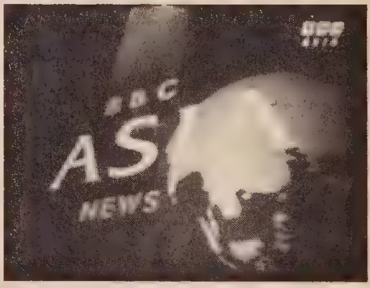

Fig. 5: BBC Asia Service.

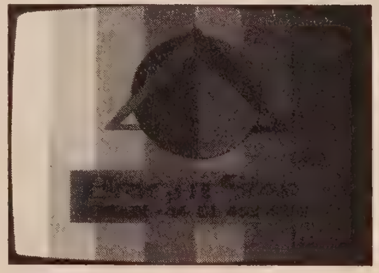

Fig. 6: From Eutelsat.

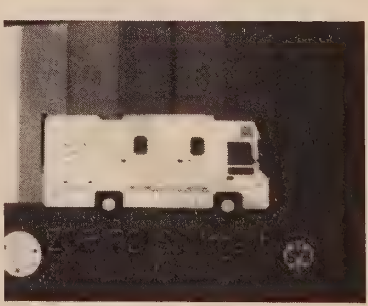

Fig. 7: From Eutelsat.

AHMADIYYA
MUSLIM

Fig. 8: Via Eutelsat.

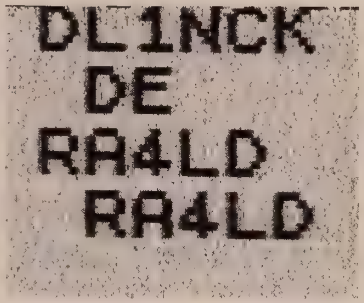

Fig. 14: Russia.

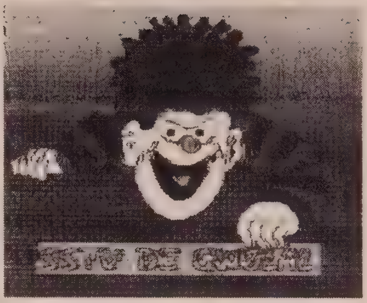

Fig. 15: Wales.

UROPEAN TELECOMMUNICATIONS
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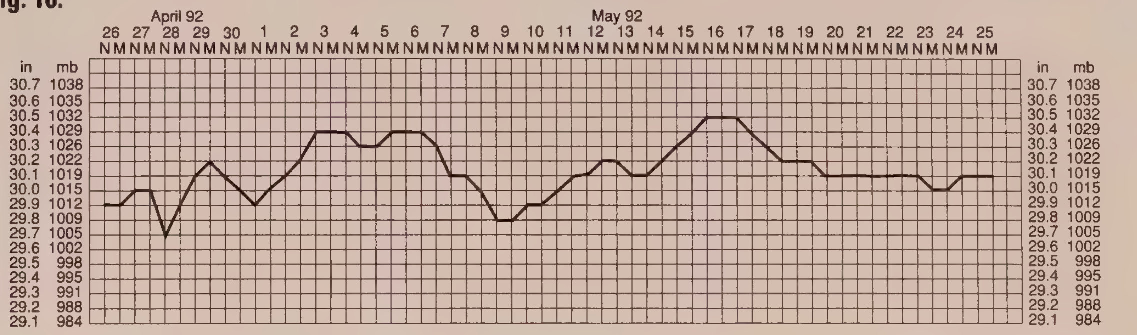
Fig. 9: Via Eutelsat.

Fig. 16.



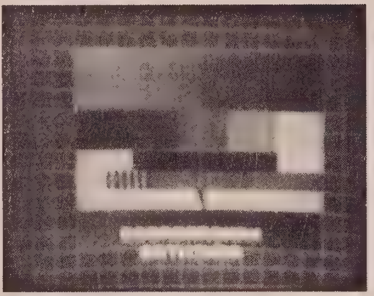


Fig. 10: Bathinda.

Fig. 11. Lahore.

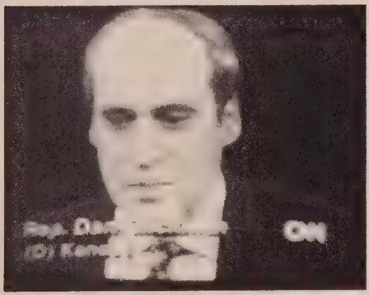


Fig. 12: Lahore.

Fig. 13: Germany.

deal of DX would be available with the prolonged spell of hot weather and high pressure we have had during this last week," wrote **George Garden** (Edinburgh). With this in mind on the 17th, he took the television gear to his usual DX spot, high on Cairn O'Mounth and was rewarded with strong signals from Holland (PTT-NED2 & 3) and parts of the UK on the u.h.f. band. He also saw ITV Tyne Tees from Bilsdale, 'in strong colour' (Ch. 29) and Pontop Pike, (Ch. 61) and Borders TV 'as good as a local' from Selkirk on Ch. 59.

As expected Simon Hamer had a good haul on the 17th with strong signals in Bands III, IV & V from stations in Belgium (BRT1 & 2 & RTBF1 (French)), Denmark (DR & TV2), Germany (ARD1, NDR3, RTL+, SWF3, WEST3 & ZDF), Holland (NED1, 2 & 3), Ireland (RTE1 & Network 2), Norway (mainly Band III) and Sweden (SVT1 & 2 & TV4).

Carl Bowen received v.h.f. pictures from Holland (NED1) on the 17th and Denmark (S. Jutland)on the 18th. Bob Brooks saw good colour vision and sound from Denmark (DR) and Germany (ARD Munchen & RTL Koln) at the higher end of Band III on the 17th. The "evening of the 19th saw a dramatic thunderstorm, rather like the classic 'Dracula' films with continuous flashing and rumbling," wrote David Glenday. He added, "the thunderstorms heralded a cold front which brought all tropospherics to a halt by the following morning." This event was well summed up by David who said "it was the best opening since that great summer of '89. German relays with e.r.p.s of under 0.5kW were received" and the British forces broadcasting service test-card from Osnabruck was in glorious colour. He logged Nederland 3, (Ch.59) from the Maastricht relay for the first time, the American Forces Network from Soesterberg and 'Eins Plus' during a deep fade by Chatton on Ch.E49. "Need I say more?" remarked David.

Tropospheric conditions were often good during May, for example, Russ Burke received a test-card from Holland (PTT NED3) on the 6th. While in Cornwall on the 6th and 7th, **S.M. Hockenhull** noted that pictures from the local BBC 1 (Ch. 22), BBC 2 (Ch. 28) and TSW (Ch. 25) were subject to co-channel interference from stations in France. At one time he saw the French caption 'TF1' 'floating' in the background of BBC 1 on Ch. 22. "By the evening of the 8th, conditions generally returned to normal" said S.M. accompanied by an increasing W-SW breeze, low-cloud and drizzle.

The weather turned suddenly warm on the 13th and, as the high pressure began to fall, French stations, most likely Canal+, began to appear in Band III on my JVC 3060 with its own rod antenna, while I was parked at Emmets Gardens in Kent and later in Ashdown Forest, Sussex.

During the afternoon of the 23rd, George Garden again went to Cairn O'Mounth for a spot of DXing and, by carefully adjusting his antenna as he tuned through the u.h.f. band he found programmes with the Tyne Tees logo, from Bilsdale and Pontop Pike on Chs. 29 and 61 respectively. His best DX came at 1700 when he caught the station clock of Yorkshire Television (Ch. 47) from Emley Moor. Later that evening the BBC1 weather chart 'showed fog extending all along the East Coast and Inland to as far as the midlands of England', George then realised that the DX he logged was between the two fog limits.

"May has been a very busy month, with a number of first-time stations being received," wrote **David Ashley** (Norwich) on June 1 and reports that in Bands IV/V, "multi-station pile-ups were a common occurrence half way through the month." On the 15th, the 'grand-daddy' of all pile-ups came when David's four local stations suffered co-channel interference for most of the day. Contributing to this was the strong signals he received from Belgium (Canal+), Denmark (TV1), Germany (ARD1, N3, SAT1 & ZDF) and Holland (NED1, 2 & 3). He also watched programmes from Central and Tyne Tees TV on the 15th, HTV West, Tyne Tees and Yorkshire TV on the 17th and Central, Tyne Tees and Yorkshire on the 19th and 20th. I see from David's log that he received pictures from Holland on 19 out of the 25 days in May when he found conditions good.

Rana Roy noted tropospheric openings on April 2-5, 14, 15, 17 & 20 when he received pictures in Band III from Amritsar (Ch.E7), Bathinda (E.12), **Fig.10**, Faisalabad (E.6), Delhi (E.7), Jalandhar (E.9), Kanpur (E.5), Kasuali (E.6), Lahore (E.11), **Figs.11 & 12**, Mussoorie (E.10) and Pehawar (E.7). From some of these he saw adverts and plays in Urdu, Breakfast TV, cartoons, Teletext and test-cards.

SSTV

During May, **John Scott** (Glasgow), using a Robot decoder, copied slow-scan television pictures, with imaginative captions, mainly around 14.230MHz, from stations in Germany, **Fig.13**, Italy, Russia, **Fig.14** and Wales **Fig.15**. Note the horizontal bars of interference on **Figs. 13 & 15** which may have been caused by ignition, local electrical noise or another station.

airband

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New equipment is always a popular subject with readers. Before buying, think of the future: what changes are expected to the frequencies that you're interested in? Even if you can afford to replace your receiver after having owned it for only a short while, think how little resale value it will have if its coverage is obsolete.

The Sony Air-7 receiver is still useful, despite having been around for a number of years. I recommend it for its excellent r.f. performance, which is surely a top priority when choosing a receiver. Its solid construction is also commendable if a portable application is intended. As well as the v.h.f. airband (108-135.975MHz), it covers medium frequencies (good for n.d.b.s as well as broadcasters), marine and amateur v.h.f. allocations and f.m. broadcasts. This is a very handy range to have in one 'box'. The entire navigation sub-band is covered from 108MHz and 25kHz channels may be tuned throughout the complete airband (although the navigation segment actually remains on 50kHz at the present time).

It is also important to be aware of the limitations of any equipment. The Air-7 can only memorise up to 10 frequencies in the airband. Searching is only possible across the whole band, there being no facility for sub-band limits. Coverage stops at 136MHz with no possibility of modifying the set to receive the new 136-137MHz allocation. It is strongly rumoured that 12.5kHz channels will be adopted in the communications segment towards the end of the decade and the Air-7 will not receive the newly interleaved channels if this happens.

Sony have now brought out the Air-8 which is remarkably similar to the Air-7 but slightly cheaper. I've only seen it advertised by one supplier. An older advert showed a receiver identical to the Air-7 apart from the 'Air-8' label; a more recent catalogue shows the same receiver with the important difference that coverage has been extended to include the 136-137MHz segment. However, the text in the catalogue still says that coverage stops at 136. No mention is made of channel spacing and there are still only 10 memories.

The only supplier that I'm aware of is Transair Pilot Shop, West Entrance, Fairoaks Airport, Chobham, Near Woking, Surrey GU24 8HX, Tel: (0276) 858533. Price is £199 plus £3.50 postage, inclusive of VAT.

If anyone buys one of these, let me know how it performs! In summary, the v.h.f. airband has already been extended up to 137MHz and 12.5kHz channel spacing seems likely eventually. The u.h.f. airband is already divided into 12.5kHz channels.

The newer wideband scanners also have their place. Again, there are disadvantages, of course. Wideband circuits are susceptible to picking up strong signals other than the one being tuned in. This can cause the scan to stop on a particular channel even though there is actually nothing there. The scanner has latched on to a strong signal (often a broadcast) that's actually on another frequency. The effect is worse when an external antenna is in use; attenuation is a simple remedy, filtering also works but is more complicated. Base stations are far less prone to such strong signal breakthrough than hand-helds.

Receiver Problems

A frequent question I'm asked is how broadcasts can appear on the v.h.f. airband and vice versa. Something along these lines is worrying **Lee Williams** (Birmingham). A typical superheterodyne receiver (and that's most commercial ones) consists of two parts. It's easier to design a receiver that picks up just one frequency, and often 10.7MHz is chosen. So, the first section of our two-part receiver is a fixed-frequency 10.7MHz receiver which is able to amplify a radio signal at this frequency and eventually turn it into recognisable audio.

As good as it is at receiving 10.7MHz, this receiver is not much use. We want to pick up other frequencies as well! The other half of the receiver is the bit through which the signal from the antenna passes first. This circuit converts whatever frequency you want to 10.7MHz. This converted signal can now be received by the other part of the circuit. In fact the 10.7MHz signal is an intermediate step in the process of reception and not surprisingly is called the intermediate frequency.

In order to produce 10.7MHz from, say, 127.125MHz it is necessary to mix it with another oscillation. The local oscillator, so called because it's part of your receiver, might be on 116.425MHz. One of the things that happens when you mix these two signals is that new frequencies are generated - including the difference between the two (127.125 - 116.425 = 10.7).

What happens if 105.725MHz gets into the receiver? Well, mixing again, we could get 116.425 - 105.725 = 10.7. Now you see how a superhet can receive two frequencies at once - separated by twice the i.f. Please note that all answers are printed in the column and I do not reply directly.

Information Sources

Every five years or so, the military change all of their u.h.f. channels. This happened in May so any information sources on this subject could be obsolete unless they have been updated recently. As usual I suggest that you should obtain your information from the most direct source possible, rather than reading it second-hand elsewhere. So, to obtain the latest copy of the RAF *En Route Supplement British Isles and North Atlantic* send £7.25 plus £1.00 postage to 1 AIDU, RAF Northolt, West End Road, Ruislip, Middlesex HA4 6NG. Cheques should be payable to 'MOD Public Sub Account RAF Northolt' and must be crossed 'Bank of England Account HMPMG'. Issues from May 11 onwards show the new changes. Other *En Route Supplements* are *Northern Europe*, *European Mediterranean* and *Africa & Southern Asia*. There is also a useful *Flight Information Handbook*.

I expect **Chris Ward** (Sutton Coldfield) will hesitate no further in ordering his copy. Like **Paul Wey** (Baldock) he brings the latest u.h.f. changes to my attention. Paul reports that the Red Arrows are now on 242.2MHz during their displays.

The CAA have updated their Doc 514 entitled *Aeronautical Information Services (AIS): A Guide*. Although much of this document seems to be the sort of detail that will only interest keen pilots and commercial operators, there are two appendices which will immediately appeal to my readers. One lists nav aids (in alphabetical order of name) giving ident and type of beacon; the other gives the ICAO four-letter codes for aerodromes. Both lists are confined to the UK. The good news is that it's free of charge but an s.a.s.e. (A4, 200g) would doubtless be appreciated. Write to Mr. P.J. Chambers, Aeronautical Information Service, Room 162, Control Tower Building, London (Heathrow) Airport, Hounslow, Middlesex TW6 1JJ. When you get your copy, don't ignore the more detailed sections - it's surprising what you can learn from them.

Another source of useful information is *Short Wave Communications* by fellow columnist Peter Rouse GU1DKD and published by PW Publishing Ltd. A copy of this is the prize from the last Christmas Quiz and the Editor has kindly sent it to the winner, R. Spooner (Cleveland).

Let's Play!

I must be getting old. 'Airband' first appeared in August 1987 so this issue marks the start of the sixth year. **Mike Hack G8SLU** is a reader with a long memory; in that first 'Airband' I mentioned a computer simulation 'game' for the Amstrad PCW. Hewson's *Heathrow Air Traffic Control* simulates a secondary surveillance radar screen at Heathrow Approach and is very realistic considering the limitations of the PCW which is hampered by a rather slow Z80 processor. Mike also has a version; this runs on his Spectrum.

Over the years many computerised readers will have progressed to PC compatibles. What aeronautical simulations are available? Well, Microsoft's Flight Simulator is well known. It is available with a real control column but I found it rather touchy and unrealistic on the computer that I tried it on. I suspect that quite a fast processor is needed for realism, but that shouldn't be too hard to find these days. I have also heard high acclaim for another package called Airline Transport Pilot (ATP) although I haven't tried this one personally.

One that will interest Mike is Tracon which runs in 512K on a PC compatible under MS-DOS with or without Windows. The name is a contraction of TRAffic CONtrol, an Americanism. A typical screen display shows secondary radar in the left three-quarters of the screen with flight progress strips in the rightmost column. Again I've not tried it but the idea looks good. The package can even link to the Microsoft Flight Simulator. The cost is £45.99 plus £3.50 postage from Transair Pilot Shop (address previously).

Frequency and Operational News

Not as exciting as the u.h.f. changes mentioned above, but still useful to know, are some n.d.b. amendments which appear in *AIC* 44/1992 from the CAA. The Cardiff (GG, 329.5) and St. Mawgan (SM, 356.5kHz) n.d.b.s have been withdrawn. Changes of frequency now put the n.d.b.s at Brawdy (BY) on 427, Finningley (FY) on 417, Lee-on-Solent (LS) on 432 and Leuchars (LU) on 417kHz.

I noticed that Seneca G-FLYI is no longer operating as Capital Radio's 'Flying Eye' traffic-jam spotter. The replacement is Cougar G-FLII which accommodates just four occupants and has been seen flying over Edgware when operating out of Elstree. The underwing colour scheme is unusual, with its contrasting rectangles which contain the registration and make it readily identifiable from the ground. Capital broadcasts to the London area on 1.548 and 95.8MHz.

"Has Humberside changed frequency?" So asks **F.J. Hermann** (Hull). Indeed, Approach is now on 124.675 instead of the old 123.15MHz. Tower remains on 118.55MHz. There are also two non-directional beacons (n.d.b.s) which are on frequencies similar to medium-wave broadcasts. On the approach to runway 21, and at 4.1nm out, is a beacon with callsign HMS on 350.5kHz. On the aerodrome itself is another n.d.b. with callsign KIM on 365kHz. Humberside was active in the War when it was known by its local name of Kirmington.

CONTINUED ON PAGE 51 ➡

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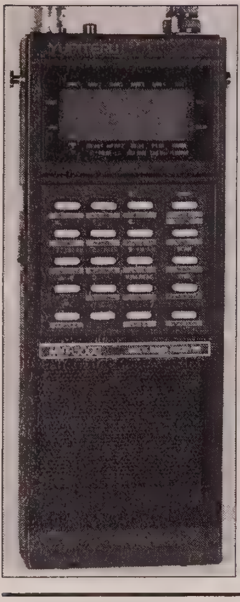

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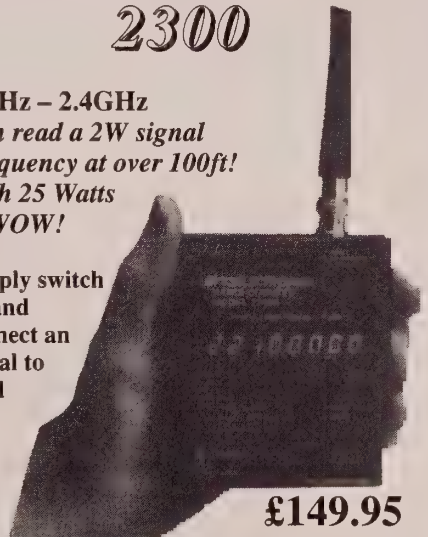

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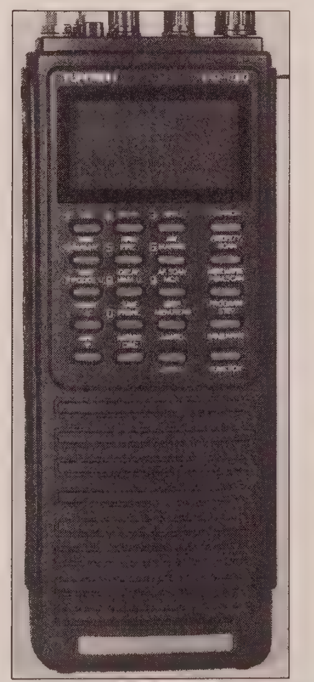

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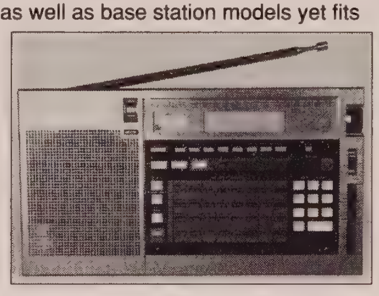

If you want a truly portable communications receiver that performs as well as base station models yet fits into the domestic scene, look no further. At £399 it would be good value. At £289 it's an absolute bargain.

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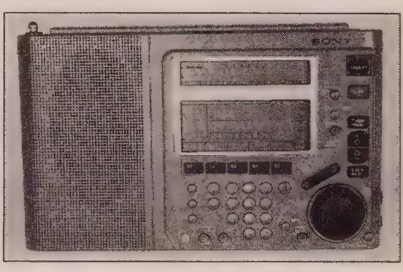

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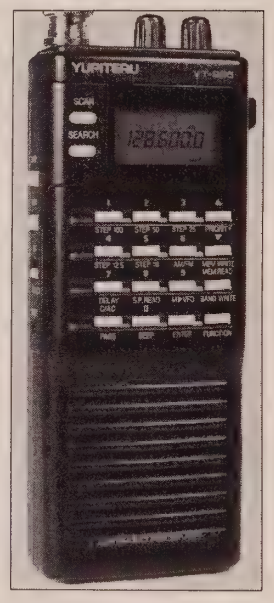

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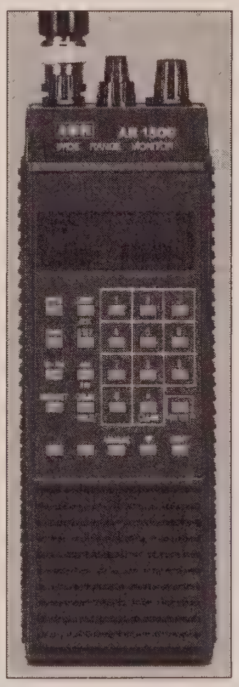

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scanning

Alan Gardener
PO Box 1000, Eastleigh, Hants SO5 5HB.

Several readers have commented on *The UK Scanning Directory,* which I mentioned in the June column. Reactions have varied depending on their level of involvement with the hobby, typical comments included 'I was amazed that such information could be published' or 'How do they get away with it' with just a couple of readers saying 'It didn't tell me much that I didn't already know' or 'It has helped to fill in one or two gaps in my own list'. My overall impression is that most people have gained a lot of information from the publication. The publishers hope to produce an updated version soon and are asking purchasers to send them updated information, I will be very interested to see the next edition - if it appears.

A few readers commented that it would be great if the publication was available as a PC compatable ASCII text file so that they could incorporate it into their own frequency databases. This sounds like a very good idea but I suspect it would cause problems for the publishers as it is much easier to copy off the disk than photocopy the whole booklet. Perhaps an ASCII version could be produced for those people who contribute information on disk?

I know that several readers produce and swap frequency lists many of which have been sent to me for inclusion in the column. I am always pleased to receive such information (especially on disk) as it allows me to assess what is happening nationally. I must make it clear that for legal reasons I cannot print specific frequencies, however I do try to include details of new systems and allocations whenever possible.

Databases

Whilst we are on the subject of frequency lists **Jim Cove** of Liverpool wonders how other readers keep track of their frequency information. He has a PC and wonders if there are any simple database programs available which are particularly suited to this task. He wants to be able to enter information into the PC with the receive frequency, transmit frequency (if known), mode, callsign and any other information. He has tried various professional databases but finds that they are usually far to complicated, take up a large amount of memory and cannot cope with mixed format information.

The ideal database would be memory resident with the information stored as a large ASCII file, the size of which would only be limited by the available disk space. The program would operate like a simple ASCII text editor but with specialised search and sort facilities. Information could be entered in free format, apart from the receive frequency which would always appear at the beginning of an entry. This would be separated by a space from the rest of the information. Each entry would only occupy one line on the screen and could contain a maximum of 80 characters. The program would allow on screen viewing of the information with the ability to update, edit and remove entries. A simple numerical sort could be performed to maintain the list in frequency order. A simple search command would find all the entries relating to a particular frequency or keyword and display them on the screen with the option to output them to a file or printer. The ability to import from and export to other databases in an ASCII format would also be useful.

I remember trying a database program a couple of years ago which had many of the features that Jim is looking for. However I am not sure if it ever became commercially available. I would imagine that there is almost certainly a suitable program available, probably as shareware, can any readers recommend one?

Long Distance Reception

The summer months are now with resulting in enhanced tropospheric propagation conditions on the v.h.f. and u.h.f. bands. Most warm evenings bring in signals from well beyond normal listening range and several readers have been glued to their scanners trying to identify mysterious new signals. One of these is **Percy Tannac** of Hampshire who has monitored French signals in the u.h.f. bands between 440-450MHz, he wonders what they are as they sound a bit like telephone conversations. You are correct Percy, they are telephone conversations. Most European countries use earlier versions of our 900MHz cellular telephone system. These mainly operate at around 450MHz but the French system uses slightly lower frequencies for its system. During the summer months many transmissions from France can be heard particularly along the southern coastline of Britain. These cause considerable problems for users in this country as the transmissions frequently appear on commercial base station receive frequencies. These interfering signals can often be very strong and in some cases may even override more local transmissions.

To add to the problem the interfering signal may on occasion be retransmitted by the base station only to cause additional problems for other base stations in other countries. This used to happen fairly frequently to amateur repeater stations on 430MHz (70cm) as the UK stations use exactly the opposite transmit and receive frequencies as those used in several neighbouring European countries. The end result was that every time propagation conditions improved the repeaters used to 'lock' each other up. Better co-ordination of repeater frequency allocations has improved this situation.

The police are another user who are particularly troubled in this respect. This is because their Personal Radio schemes use the same frequencies for reception as European cellular base stations use for transmission. A study has been made of these problems but it would seem that only a complete reorganisation of the way frequencies are used by neighbouring countries would resolve the situation. This is likely to cost a considerable amount of money and take many years to achieve but there are the first signs of frequency allocations being co-ordinated within countries who are members of the EEC.

Turning to slightly lower frequencies **Richard Gosnell** of Wiltshire was impressed that readers were able to identify Pakistani Police transmissions on 38.650MHz. He has now set a new challenge - can anyone identify the Russian sounding, CB like transmissions that can be occasionally heard on 25kHz channels between 34.15 - 34.5MHz?

Portable 'Phones

It looks as if my assumption that the CT2 public cordless phone system was dead may have been a bit premature. A new revamped system is now being rapidly installed in certain areas of the UK. The system will be known as 'Rabbit' and is being operated by a branch of Hutchinson Telecommunications. This is a very large international company which may well have enough financial 'clout' to ensure that the system survives the early stages of its inception.

CT2 is like a public version of a standard cordless telephone. It uses digital transmissions on thirty 100kHz wide channels in the 865-868MHz band. The unit can be used like a normal cordless phone if the user has a special base unit in his home, but the handset can also be used outside the home if you are within range of a public phone point. In this case you can only make outgoing calls which you will be charged for electronically. The main objections people had to using to CT2 when it was first introduced were the high monthly rental costs and the lack of a facility to receive incoming calls when the handset was used away from home. In order to overcome these problems Hutchinson have put together a very attractive package consisting of a CT2 handset and personal pager. As the company has not had to recover the same level of development costs as the original CT2 operators they can afford to charge much lower rental costs. The personal pager option allows callers to leave CT2 users their phone number which can then be called at the CT2 users convenience.

CT2 is not the only system being installed at the moment, equipment and antennas for the new GSM digital cellular telephone system is now starting to make an appearance in several areas around the country. The first installations which were sited within the confines of the M25 have now been operating for some time but there are still very few mobiles in existence. As GSM is supposed to offer a much higher grade of service than existing analogue cellular systems I would anticipate that the system operators will wait until a large proportion of the country is served by GSM base stations before they formally launch the new service. Unlike the existing cellular system GSM base stations do not use separate channels for speech and signalling. System control information is conveyed within the digital format used to transmit speech so, it is unlikely that you will hear GSM transmissions unless the system is actually in use.

Antennas

John Bidgood of Hampshire has been experimenting with different antennas and reports good results from an antenna which was originally designed for use on the 27MHz CB band. The antenna in question is called a 'Super Lance' and measures approximately 760mm long. Although it did not give particularly good results on 27MHz (I suspect this is mainly due to its compact dimensions) it has proved quite effective for reception purposes on the v.h.f. air and marine bands and on various v.h.f. and u.h.f. amateur bands, even though it is mounted inside the roof space of his house. John finds that it makes a good second antenna when compared to his externally mounted wideband 'Diamond' discone. As I have said before it often pays to experiment with antennas as they frequently exhibit resonances well beyond their intended operating frequency. Almost any externally mounted antenna will make a big difference to reception when compared to the telescopic or 'rubber duck' antennae supplied with the receiver. My thanks to John for passing on this information.

Industrial Espionage

I make no excuses for returning to the subject of bugging, in this case the use of electronic devices for industrial espionage. Whilst passing time in one of my favourite bookshops I came across a very interesting publication entitled *The Industrial Espionage Handbook* by Hugo Cornwall, Published by Random Century 1991, ISBN 0-7126-3634-X. The author has already written a well-known book which has been revised several times on the subject of Computer Hacking. This time he turns his attention to Industrial Espionage. Although at first sight this subject may seem unrelated to the usual contents of this column, the book does include several chapters on bugging and scanning related topics, which is the main reason for mentioning it. In addition to these subjects there is a wealth of other information concerned with collating and interpreting information which I am sure could be used to great effect by readers with specific monitoring interests.

Information

Once again the end of another column, my thanks to all those readers who have written to me with information and comments regarding the column. Due to the number of letters I receive and the amount of work undertaken during my full time employment I am not usually able to reply directly to readers, however I do try to answer specific questions in the column whenever possible. I also regret that I cannot provide photocopies of articles which have appeared in back issues of *SWM* or other magazines. If you require such information I suggest that you either contact the Editorial Offices directly or obtain copies via your local library.

Until next month - Good Listening.

Airband 47 ➡

The next three deadlines (for topical information) are August 7, September 4 and October 9. Replies always appear in this column and it is regretted that no direct correspondence is possible. All letters to 'Airband', c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS. Genuinely urgent information/enquiries, Tel: 081-958 5113.

Abbreviations

AIC	Aeronautical Information Circular
AIDU	Aeronautical Information and Documentation Unit
CAA	Civil Aviation Authority
f.m.	frequency modulation
g	grams
ICAO	International Civil Aviation Organisation
i.f.	intermediate frequency
K	1024 bytes
kHz	kilohertz
MHz	megahertz
MOD	Ministry of Defence
MS-DOS	Microsoft Disc Operating System
nav	navigation, navigational
n.d.b.	non-directional beacon
nm	nautical miles
PC	Personal Computer
PCW	Personal Computer Word-Processor
RAF	Royal Air Force
s.a.s.e.	self-addressed stamped envelope
u.h.f.	ultra high frequency
VAT	value-added tax
v.h.f.	very high frequency

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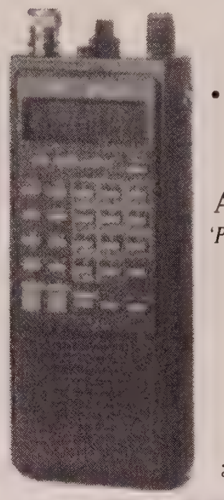

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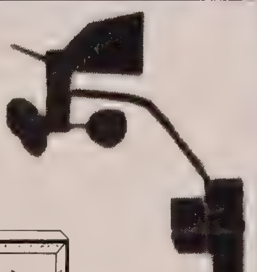

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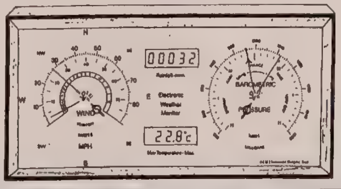

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The pictures transmitted by the various WXSATS are at their best during the summer months - May to July, with the sun reaching high elevations over the northern hemisphere. Regular correspondent **Brian Dudman** of Harrow sent me **Fig. 1** showing a sunny Europe with plenty of detail from NOAA 11. Looking closely at the image you can clearly see the fog in the North Sea that hugged the eastern coastline of the UK for several days in May.

The evening passes of three of the American NOAA satellites (numbers 9, 10 & 12), all pass north-bound over the UK during the early evening, reaching us while transmitting infra-red on both channels. This shows that they are in twilight, but they quickly switch to visible imagery well before the UK is reached. However, see the later paragraph!

The quality of the visible image transmitted by each NOAA is different, possibly due to ageing of the satellite's systems. NOAA 9 is the oldest satellite and its visible image is distinctly degraded when compared with NOAA 11, though admittedly one cannot always compare similar levels of illumination. However, comparing visible images from NOAAS 9 and 12 which can be almost identical - the difference becomes obvious.

The Russian WXSAT METEOR 3-3 has continued to transmit continuously on 137.40MHz, noted by several correspondents including **John Wills** of Romford who heard it in early May. **Pioter Herko** of Poland sent me a picture - see **Fig. 3**. This satellite came on following the problems with METEOR 3-4 that occurred in April when those images went haywire (I don't know any better technical term)! **Peter de Jong** of Holland sent in **Fig. 5**, which shows the strange appearance of the MET 3-4 image at that time.

The class three METEORS all orbit at about 1200km height, which is the highest orbit (apart from geostationary!) of the various WXSATS and so we can follow METEOR 3-3 much further north than the others. Unless you have a poor northerly horizon you can expect to see most of Greenland from this satellite. The Russian WXSAT operating on 137.85MHz is currently (mid-June) METEOR 2-19 which replaced METEOR 2-20 around May 20.

US Equipment for METEOR

Goddard's ozone-mapper ground crew went to Moscow to calibrate their instrument on METEOR 3, and another ozone mapper may also be added to a later METEOR. The Russians have suggested eventually merging the US and Soviet civilian weather satellite systems. This may give better data transmission continuity and more opportunities to operate new instruments.

Thermal Images

Another seasonal aspect of satellite imagery is seen in the summer infra-red images. During the winter months the seas are usually warmer than the land and so appear darker on the NOAA images (but lighter on the METEOR class three images which are reversed). Norway and Sweden show this quite markedly.

As the summer approaches, the temperature rises and during the afternoon the land reaches much higher temperatures than the sea and so becomes very dark. By mid-summer the land rapidly warms up during the day, and so the image then shows the warm land as dark and the cooler sea as light. Norway has, by then, reversed its previous appearance and the land has a dark thermal image, contrasting superbly with the snowy mountains.

During the clear, sunny evenings of mid-May I had a look at temperature variations around the UK using each of the NOAAS; the coastal waters were still only about 11°C; the towns showed 13°C and the moors near Plymouth were at 15°C. Paris was still registering 17°C.

Such measurements are possible because part of the picture section that contains the thermal infra-red image has a set of temperature calibration wedges included - see the left edge of **Fig. 1**. Some software uses this information to directly calculate the temperature, other programs may require 'ground truth' data, i.e., an actual temperature, perhaps measured locally to use as a reference point.

A NOAA Surprise

On May 27, NOAA 12 came over Britain transmitting a visible image during the evening pass and then changed over to infra-red while still approaching the UK, i.e., the opposite of normal operations! NOAA 9 came up shortly after and repeated the surprise. NOAA 10 behaved normally, transmitting infra-red until reaching the UK which was still enjoying summer twilight when it switched, quite normally, to visible. Early the next morning I monitored NOAA 12 which, of course, was in sunlight but found it still transmitting two infra-red images! Within a couple of days all was back to normal with all of the NOAA WXSATS. Some days later I received a disk from **Paul Wilson** of Macclesfield containing information obtained from Bulletin Boards including SpaceNews and Usenet which carried a note that apparently a software error had caused the problem.

New Products

During the last two years I have invited (at least) three British companies to send me details of their new weather satellite products for possible mention in this column. None responded.

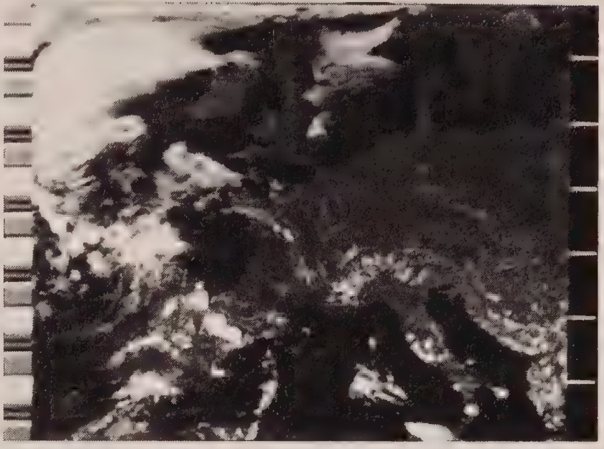

Fig. 1: NOAA 11 Sunny Europe from Brian Dudma.

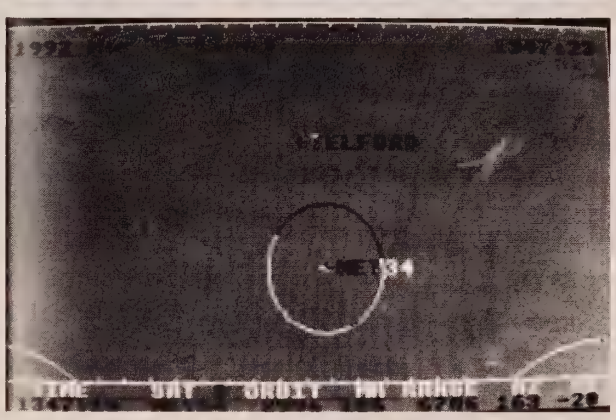

Fig. 2: 'Satfoot' screen display from Roger Ray.

Since then, I am pleased to say that Pixel-Plus Developments of Nuneaton (not included above) have sent me details of their new range of equipment, aimed at the increasing WXSAT market. They supply both hardware and software which runs on most current PCs (80286 and above) and have both a basic version, called PMS1 and a more advanced program called PMS2. The hardware can be bought either in kit form or as completely built units, and comprises a decoder and a receiver for the polar satellites, the latter unit I understand is due to be released shortly.

The interface unit (the part which takes the decoded satellite data and passes it to the computer for analysis and display) uses the PC's parallel printer port, which they claim is a unique approach allowing them to upgrade the software more easily and cheaply. For further details and prices contact PPD: Tel (0530) 62565.

Letters

Roger Ray sent me a picture from the screen of the program 'Satfoot' shown in **Fig. 2**. He has been waiting for a Maplin METEOSAT unit for a number of months but has now decided to stick to the NOAAs and METEORs! One or two other readers have told me similar stories. The quality of photographs being submitted for inclusion in this column is often quite high and I aim to include three or four per edition. I have a backlog of pictures, including some from Peter de Jong, Peter Beardmore, Brian Dudman and others, plus some from Peter Cotton of Comar Electronics and Dave Cawley of Timestep Weather Systems.

Ray Lowes of Sutton-on-Sea has recently set up a WXSAT receiving system using his '286' PC which has 4Mb RAM and a large capacity hard disk. He is now using the Timestep PROsat scanning receiver and PROsat II software, so wrote simply asking for recent Kepler elements. As always these are available from me; just send an s.a.e. A correspondent from Hulland Ward in Derbyshire has a similar system to Ray's but was worried when he used the gridding facility in PROsatII to put a latitude and longitude grid over the UK and found that it did not place them correctly. However, when he checked the satellite Kepler elements he realised that they were old and so wrote to me for updates. Any program (and there are a number now calculating grid lines) will only place them accurately for a couple of weeks or so, after which the errors will accumulate.

Pioter Herko is monitoring several types of satellite including the WXSATS, the amateur radio satellites such as SARA, UoSAT-2, DO-17, the shuttles and, of course, MIR. Pioter has built his own a.p.t. decoder and sent me some print-outs of NOAA and METEOR passes, one of which (a complete pass of METEOR 3-3 from North Africa to Greenland) is shown in **Fig. 3**. Pioter also monitors the COSMOS navigation and military satellites that operate in the 150.0MHz band. He asks whether the data heard from these navigation satellites can be decoded? Yes they can, but it is quite an exercise! Somewhere amongst my collection of satellite information I do have a description of how the data can be analysed, but it runs to several pages.

400MHz Band

I Hogan G0FYN of Manchester has been monitoring for 20 years and has recently picked up satellite signals in

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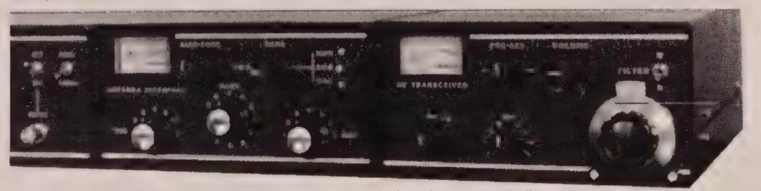

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CSL4	Additional SSB/CW filtering for our receivers	£10-50	£17-40
CTU30	HF Bands ATU for RX or 30W on TX	£31-50	£38-40
CV100	HF Converter for VHF Scanners	£26-50	£37-90
DCS2	"S Meter" for our receiver kits	£9-20	£13-80
DFD5	Digital Readout for use with our receivers	£41-50	£64-50
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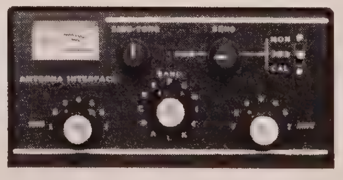


HOWES KITS are produced by a professional RF design and manufacturing company. They contain good quality printed circuit boards with screen printed parts locations, full clear instructions and all board mounted components. Sales and technical advice are available by phone during office hours. Please send an SAE for our free catalgue or specific product data sheets. Normally all items are in stock and delivery is within seven days.

72 & 73 from Dave G4KQH, Technical Manager.

the 400MHz band, in particular 400.800MHz. He wonders what services use this band. From my records, the band 400.05 to 400.15MHz is allocated to standard frequency and time satellites, and the 400.15 to 406.00MHz band is allocated to meteorological satellites and sondes, and government telemetry.

Beginners' Kepler Elements

During the last few months I have been describing Kepler elements, those parameters used to keep satellite tracking programs up-to-date. There are just two more items to cover - Mean Anomaly and Drag.

Mean Anomaly: All of the measurements described in previous months (such as Epoch, inclination etc.) allow us to draw the actual orbit of the satellite around the earth, but do not give the satellite's current position in that orbit.

Our reference point is the orbit's perigee, that point nearest to the earth, and our reference time is the Epoch. Starting at 0° (the perigee point itself,) we measure along the orbital ellipse until we reach the satellite, and this angle (measured from the perigee) is called the anomaly.

Drag: This final parameter (sometimes called acceleration) is not always given with Kepler elements. At ground level the atmosphere has a pressure which averages about 1000mb (millibars). As we ascend, the pressure gradually drops because gravity reduces with height above sea level. By a few hundred kilometres the atmosphere is very rare. Consequentially, the orbits of satellites that are passing through the earth's atmosphere are affected, particularly those orbiting below several hundred kilometres. Geostationary, and other distant orbiting satellites are affected differently!

The drag parameter refers to the change (increase) in Mean Motion (MM) of the satellite. As mentioned previously, MM is the number of orbits completed per day. So the atmosphere is actually causing the satellite to speed up as its height reduces, hence the drag has a positive value. Because the orbit of the satellite is reduced in size while the speed increases, an unstable situation arises. The craft is subjected to increasing friction from the ever-more-dense atmosphere and so its surface temperature rises, and eventually, if no action is taken, the satellite 'burns up' in the upper atmosphere - we call it orbital decay.

Orbits approaching decay have an MM of something over 16 revolutions per day. Consequentially, low orbiting satellites such as the Russian MIR complex and the Shuttle will have relatively high drag parameters, whereas the Russian METEOR class 3 satellites have a relatively low drag. The geostationary satellites will have an extremely low drag. Technically, it is the rate of change of the number of revolutions per day. When missing from an element set, you can usually improve longer term prediction accuracy by using a figure of about 0.000001.

Negative Drag!: Logically drag would always have a positive value because the atmosphere will always tend to increase the satellite's mean motion. However, there are one or two complications. These elements are often measured over a short section of the orbit and, given occasional measurement inaccuracies, sometimes the drag parameter can be quoted as negative. Another factor, particularly for the higher orbiting satellites, is the effect of gravity which can occasionally be modified by the presence of the Moon. During periods when the Moon is aligning (appearing near) the satellite, the latter's orbital speed will be slightly (and temporarily) modified. In normal use I avoid using a negative drag factor.

PC Prices

Anyone who watches the computer market cannot have failed to see the continued fall in prices of all categories and types of computer. Given the capability of currently marketed software I am sure that the PC route is the way to travel for anyone who is contemplating taking an interest in the WXSATs.

The choice of suitable systems for decoding picture data (a.p.t.) is wide and considerably improved from the distant days when I bought my first system. (I wince when I see the invoice!) For those people who haven't got a computer but who wish to consider buying one, I would suggest looking closely at the specialist magazines.

Because of my belief that computers provide the best all-round solution to the future of WXSAT monitoring I have written a detailed section on this topic in my forthcoming book being titled *Weather Satellites and Beyond*. Keep reading in future months for more details!

Framestores

My framestore still remains used almost as much as before I switched to computer operations, and I am pleased to see that many *SWM* readers still use framestores as well, judging from my mail. If you don't have a computer but want to start WXSAT monitoring, low cost framestores could be an answer. The main limitations are the inability to examine sections of the image after the event, and the lack of animation. It is possible to modify a framestore to store more than one image but it is not an easy task.

Predictions

For those who have the equipment to tune into the WXSATs but no predictions program I occasionally include a summary here for a selected day. The table lists AOS (acquisition of signal) time UTC, the LOS (loss of signal), the maximum elevation and whether east or west, and finally whether travelling north or south.

Sunday 26 July 1992

Satellite	AOS	LOS	Maxel	Direction
MET 2-19	0750	0805	40W	NB
MET 3-3	0815	0833	29W	NB
NOAA 12	0901	0915	47W	SB
MET 2-20	1301	1318	54E	SB
NOAA 11	1442	1458	74W	NB
MET 3-3	1745	1805	74W	SB
NOAA 12	1848	1903	75E	NB

Please remember that I cannot be sure whether every satellite listed will be operating. NOAAs 10 and 9 are excluded because they should be off. Either MET 2-19 or 2-20 will be operating, but probably not both.

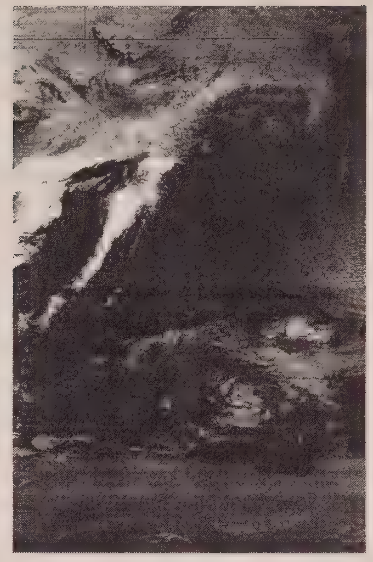


Fig. 3: METEOR 3-3 Africa northwards from Pioter Herko.

WARC

The World Administrative Radio Conference which took place last February/March allocated or confirmed a number of frequency bands, including those used by various groups of satellites. Here is the list for the 137MHz band.

137.000-137.025MHz (25kHz)
world-wide primary
137.025-137.175MHz (150kHz)
world-wide secondary
137.175-137.825MHz (650kHz)
world-wide primary
137.825-138.000MHz (175kHz)
world-wide secondary

Frequencies

The WXSATs transmit a.p.t. (picture) telemetry on frequencies within the 137MHz band as shown above. The specific frequencies used are as follows:

NOAAs 9, 11 a.p.t. on 137.62MHz
NOAAs 10, 12 on 137.50MHz
METEOR 2-19 or 2-20 on 137.85MHz
METEOR 3-3 on 137.40MHz
METEOR 3-4 or 3-5 on 137.30MHz
OKEAN 3 on 137.40MHz occasionally

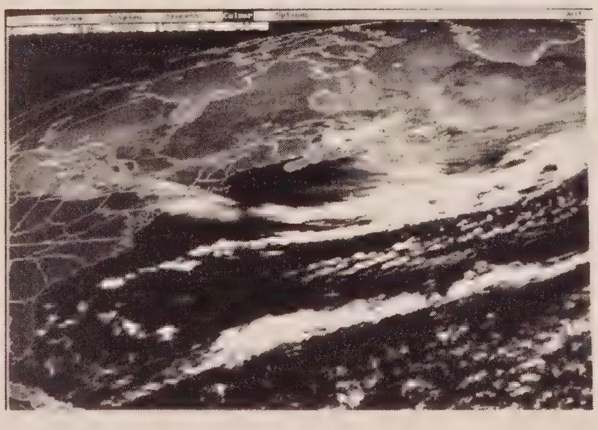


Fig. 4: Western Atlantic METEOSAT-3.

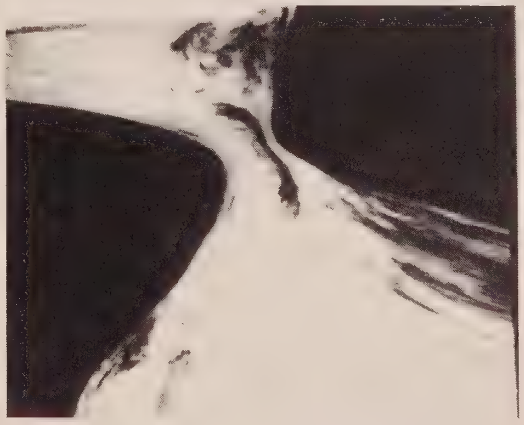


Fig. 5: METEOR 3-4 fault condition during April from Peter de Jong.

Mike Richards G4WNC
200 Christchurch Road, Ringwood, Hants BH24 3AS.

Steven Verhaegen from Brussels has written with a novel way of decoding Morse transmissions. Steven doesn't have a dedicated morse decoder so he has to use his brain power! The problem is most commercial stations send at 20 w.p.m. or faster, which is far too fast for the beginner. Steven's solution is to record the signals using the fastest speed on a reel-to-reel tape recorder. He can then replay the signal at his leisure using a slower speed. Because the frequency of the side-tone will also be lower, it's a good idea to record the signal with a higher than normal tone.

Rob Margrave of Leamington Spa has written in response to my request for help with Atari ST software. Frustrated with the lack of commercial FAX software he's written his own. The program requires any ST/STE with a mono monitor and at least 512kb of RAM. It interfaces with a Kantronics KPC-2 terminal and enables FAX images to be displayed and processed on the computer. Once an image has been received it can be cropped, inverted and flipped horizontally or vertically. The images can also be loaded and saved using the GEM.IMG format so enabling transfer to other programs. It also includes a facility for unattended down loading of images. Once an image is in memory you move about using scroll bars or zoom-in to interesting detail using the mouse. If anyone would like more information, Rob can be contacted at 24 Canon Young Road, Whitnash, Leamington Spa, Warwickshire CV31 2QU. When writing please remember to include an s.a.e. for the reply.

OOPS!

It's confession time I'm afraid. **John Dimond** from South Africa has written to point out an error in the May 'Decode' under the section titled Simpler Solution. In this feature I was discussing the way you could salvage a RTTY signal that had been received with the wrong shift. All was fine except for the example I gave to help clarify the process! I suggested that the letters ABMUTO could be converted to 12.759MHz. My mistake was with the first two characters of the example. I should have quoted QWMUTO. Of course, if you haven't seen the May 'Decode' this will all be gobbledegook! My apologies to all those who've been confused.

Hoka Reference Tape

Hoka UK, the Code 3 people have just sent me a copy of a new cassette tape designed to help listeners identify utility modes. The tape is supplied as a standard C-90 audio cassette on which are recorded a wide variety of utility signals. The signals are all real off-air - warts and all, so they sound very authentic. The fact that they're real signals also means that thay can, at least in theory, be decoded. In practice this is not so easy because of the shortcomings of the cassette system. Although the audio cassette systems works quite well with music and voice signals, it's nowhere near stable enough for complex data modes.

The most serious problem is likely to be the motor speed. If the replay unit operates at a slightly different speed to that of the original recorder two main problems occur. The first is that the audio tones of the recorded signal may not align with those of your decoder. If your using the Code 3 this is not a problem, as the centre frequency can be varied over a wide range. The second and more serious problem is that of the signal timing. The speed difference coupled with the wow or short term speed variations can seriously effect the timing of the utility signals. Although not too much of a problem for simple Baudot signals, the more complex ARQ modes can suffer quite badly.

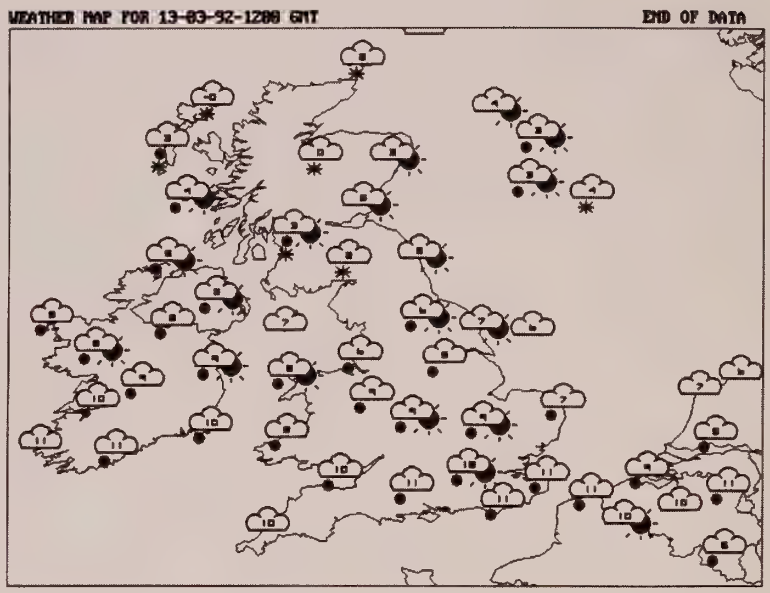
Although all this may sound like bad news this is not the case. The main use of the tape is to allow signals to be recognised by their characteristic sound. For the newcomer this may sound a bit far fetched but in practice it works extremely well.

Let's now look at the tape in a little more detail. The review version was supplied with a small (103 x 138mm) six-page booklet. This contained a detailed listing of all the modes included along with a few technical details. These technical details included the emission type, baud rate, centre frequency and shift. Not only does this give the information you need for decoding but it also helps you identify unfamiliar modes. This information was supplemented by a few notes on each mode describing the common implementations and uses.

The range of modes covered was extremely comprehensive ranging from simple RTTY through to complex military modes. There were a total of twenty-eight modes all of which were time indexed to ease location. Although fairly expensive at £20.00, I found the tape to be invaluable for identifying undecodable signals. An example of this is the many RTTY like signals around 11.214 and 11.254MHz. Using the Hoka tape, I was able to identify a number of these as a NATO pseudo random keyed broadcast mode. For those wanting more information Hoka Uk can be contacted at 26 Bury Road, Shillington, Hitchin, Herts SG5 3NY, Tel: (0462) 711600.

DPA Press FAX

After all the speculation about this station in the last few 'Decodes', I now have official confirmation of its fate. As I suspected, this FAX service migrated to satellite at midnight on March 31. They did in fact send a message that roughly translated said - see you on satellite for the next traffic item. The DCF-30 and DCF45 transmissions on 110.55 and 129.1kHz have also now moved to satellite. All these services are designed for reception by paying subscribers as opposed to some of the h.f. press services that operate a general broadcast mode.



ICS-SYNOP weather chart.

Swed-ARQ

Following my feature on this mode back in the June 'Decode', I've now received some more up-to-date frequencies for you. The frequencies are approximate as the service tends to move around quite a lot due to the use of ex-amateur equipment rather than full spec commercial gear.

6.981, 10.1516, 10, 1525, 10,1659, 12.103, 13.866, 14.406, 14.524, 14.8144, 14.878, 14.9035, 14.97, 17.4585, 18.258, 18.688, 18.692, 18.810, 18.947, 19.2181, 19.426, 19.622, 20.012, 20.607, 20.7, 20.811, 20.9194, 20.9206, 20.922, 20.944, 20.947, 20.960, 20.982, 20.987, 20.99, 22.9306, 23.0787, 23.506, 23.528, 23.548, 23.586, 23.593, 25.224, 26.6619MHz.

If you have any detailed information on complex mode frequencies please drop me a line.

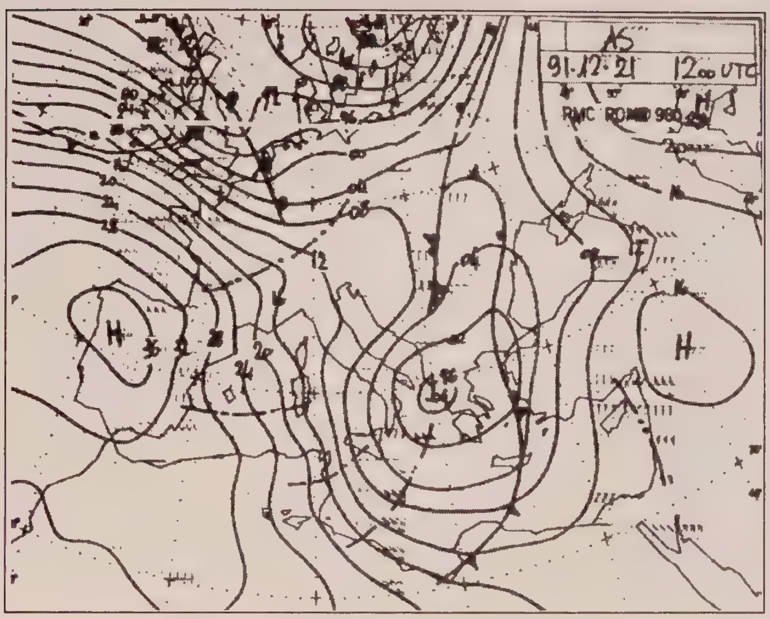
Piccolo

Continuing my series of complex mode explanations, this month it's the turn of this sophisticated British system. The system was originally developed for use by the UK Foreign and Commonwealth Office for communications with its embassies around the world. The communications problems to embassies in foreign countries are significant for a number of reasons. Most of these are associated with their location in city centres. This means that there's rarely room for large antennas and there's likely to be a high level of man-made noise. This coupled with the long route lengths adds-up to a significant communication problem.

According to the *Radioteletype Code Manual* (Klingenfuss) the first experimental Piccolo system was installed in Delhi in October 1962. Since that original installation, the system has undergone many developments culminating the current, Mk VI, version. With most of the embassies now using satellite systems, the main user seems to be the Royal Air Force. Perhaps one of the most unusual uses of the system was for the transmission of a regular newspaper to the QE2 from Portishead. The Piccolo system was chosen primarily for its extremely low error rate.

Having taken a look at its history, let's now dig a little deeper into the operation of the system. Perhaps I ought to start by explaining why it's called Piccolo. This is simply because the system uses a combination of tones that sound just like a piccolo!

The original MKI system used thirty-two tones - one for each of the combinations available in the ITA2 RTTY alphabet. When operating, the appropriate tone was sent for a period of 100ms to represent each character. In order to keep to a narrow bandwidth, each of the tones was spaced a mere 10Hz apart. This gave a total bandwidth requirement of 370Hz. This narrow spacing also placed considerable demands on the frequency stability and accuracy of the transmitter and receiver. The specification demanded an overall accuracy of ±1Hz. One of the keys to the high reliability of the system was the comparatively long duration of each element of the signal. The 100ms tone length leaves plenty of time for the receive filters to isolate the



FAX image received by George Newport.

tone even through heavy noise and fading. Typical error rates on this system were an excellent 1 in 10^4. It's worth noting that this is achieved without any built-in error correction system.

Moving on to the latest, Mk VI version, we find that the system has been simplified somewhat and now uses either six or twelve tone pairs. By far the most common variant uses the six tone option and runs at an effective data rate of 50 or 75 baud. In this system the six tones are spaced 20Hz apart with each character comprising a unique combination of two tones. Because two tones are used, each is sent for 50ms instead of the original 100ms used in the thirty-two tone version. Although slightly less reliable than the original system, the performance is still excellent. The main advantage is a greater tollerance to frequency variation and a subsequent reduction in equipment cost.

Having had an insight into this mode, your next question I'm sure is - how can I decode it? This is not easy as there a very few systems on the market that can handle Piccolo. The only ones I'm aware of are the Hoka Code-3 (option 2) and Universal M-8000. One further complication is the need for a very stable receiver and a lot of patience - this mode is extremely tricky to tune in accurately. Just to finally put the dampers on, should you successfully lock on to a Piccolo signal you'll find that the vast majority of the traffic is encrypted. For those who'd like to tune-in just to see what a Piccolo signal sounds like, here are a few frequencies to try: 14.7095, 15.855, 16.2695, 20.655 and 20.2663MHz

Those of you with baud rate measurement facilities will find that Piccolo signals give a measured rate of 13.33 baud. This is not the true baud rate but simply a result of the 50ms tone duration.

ICS-SYNOP

This new decoding package has just been released by ICS Electronics in Arundel. As the name implies, ICS-SYNOP has been designed to process the SYNOP RTTY data that's transmitted by so many weather stations. For those not familiar with these transmissions, they comprise detailed weather reports from monitoring stations all over Europe. In order to keep the data in a common format the reports are sent to a strict code which is called SYNOP. The final transmission comprises a series of five figure groups which contain the station identifiers along with the detailed weather reports. Perhaps the most popular UK station for this data is Bracknell Meteo on 4.489MHz using 50 baud RTTY. The problem facing most readers is how to make use of the received information. There have been several solutions printed through this column but perhpas the easiest is to use a commercial decoding package such as the ICS-SYNOP.

This particular implementation has been designed to operate either with ICS-FAX, ICS-FAX 2 or the PK-232 terminal unit. In essence in needs an external RTTY- ASCII decoder and processes the received ASCII data.

Once the data has been received the package is able to present the information in a wide range of different formats. In addition to straightforward text displays, the decoded data can be graphically represented. The graphic display is by far the most interesting and enables the data to be examined in many different ways. For example you can choose to just display the temperatures for Europe or just the UK. You can also select various combinations so as to give you just the information you need. I've shown an example in the column which gives the cloud cover, temperature and precipitation for the UK. One of the great advantages of using SYNOP data for weather charts is the up-to-date data - many of the measurement are only a few hours old.

Like many modern packages ICS-SYNOP is only available for IBM PC compatibles. In order to take advantage of the graphic displays you will need an EGA or VGA display. Although it will work with CGA and Hercules displays, you will lose the graphic display option. Once the data has been captured there are various storage options for the processed images. They can either be saved to disk or output to a standard dot matrix or laser printer. For those with Paint packages, the images can be saved in PCX format for later processing. You can also create computer slide shows of your favourite images. In addition to general amateur usage, I would have though this type of package would make an extremely effective educational tool.

The current price for the ICS-SYNOP is £99.95 plus £3.00 post and packing. For more details contact ICS Electronics at Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 0BD, Tel: (0903) 731101.

Xinhua News Agency

Paul Chace of Chichester has recently sent me a copy of a QSL letter from this popular news agency. Included in this letter were details of their English transmissions beamed to Europe. Knowing that many of you have a strong interest in press stations I've reproduced the details here:

2330 to 0200UTC, 9.417 (BZP59), 9.491 (BZR69)
0530 to 0830 and 0930 to 1230UTC, 14.367 (BZP54), 18.872 (BZR68)
1330 to 1600UTC, 11.68 (BZP51), 12.265 (BZR62)
1730 to 1900UTC, 9.417 (BZP59) 9.491 (BZR69)

ERA Printer Link

Back in the April 'Decode' I included a plea for help from Ray Pugh of Southport. He wanted help in finding a suitable printer for his ERA Microreader. Well, **P. Dennison** of Thornton Cleveleys has written recommending the Star LC-20 printer and SPC-10 serial interface. The connection between the ERA and printer is made using a screened lead with the centre connected to pin 3 of the 25 way D plug while the screen goes to pin 7. You will also need to set the d.i.p. switches on the SPC-10 as follows:

1 on
2, 3, 4 and 5 off
6 on
7 and 8 off

With the settings complete you can connect both units together and power-up. My thanks to P. Dennison for providing this information.

Frequency List

Finally here's the frequency list for this month which has been compiled from logs sent in by; **George Newport**, **Ted Rickett**, **Day Watson**, Jan Nieuwenhuis, **Lee Williams** and **Steven Verhaegen**. If you would like a copy of my complete list just send three first or second class stamps to the address at the head of the column.

The format for the list is the usual, frequency, mode, speed, shift, callsign, time and notes.

2.4235, ARQ, 100, 170, SAB, -, Goeteborg Radio
3.1725, RTTY, 50, 850, IMB1, -, Rome Meteo
3.3319, Autospec, 68.5, 85, -, -, Oil Rig?
3.517, CW, -, -, GNI1, 2133, Niton Radio
3.6073, CW, -, -, GKZ1, 1614, Humber Radio
3.6078, CW, -, -, GHD2, 1630, Hebrides Radio
3.652, FAX, 120, 576, -, -, RN London
3.731, FAX, 120, 576, GXH, 2032, USN Thurso
4.2025, FAX, 90, 576, RAT21, -, Moscow Meteo
4.211, CW, -, -, LGB, 1725, Rogaland Radio
6.918, FAX, 120, 576, ECA7, 1734, Madrid Meteo
7.625, FAX, 120, 576, IBH, 1355, USAF Vicenza
7.806, RTTY, 50, 400, -, 2000, Tanjug Press
7.959, RTTY, 50, 400, 9BC23, 2050, IRNA Press
8.167, FAX, 60, 288, LQB9, 2208, DyN Buenos Aries
10.2885, ARQ-E, 96, 170, -, 0627, MFA Bonn
10.536, RTTY, 50, 400, CFH, 2300, Halifax Meteo
11.1236, FEC-A, 96, 400, DGL26L2, -, PIAB Bonn
11.4235, FEC, 100, 170, SPW, -, Warsaw Radio
12.3145, FAX, 120, 576, -, 2112, UNID US Navy
13.510, FAX, 120, 576, CFH, 2015, CF Halifax
13.8758, ARTRAC, 125, 90, -, 0558, MFA Budapest
14.573, RTTY, 50, 400, -, 0707, JANA Tripoli - arabic
14.932, RTTY, 50, 400, -, 1200, Algerian Press APS
17.0226, FEC, 100, 170, WLO, 2031, Mobile Radio
18.093, FAX, 120, 576, LRO84, 2148, Buenos Aries Meteo
19.697, CW, -, -, OST, 1252, Oostende Radio
19.862, FAX, 120, 576, NPN, 1640, USN Guam
20.0118, Twinplex, 100, -, -, 1752, Pakistan Emb, Belgrade

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Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless stated, logs were compiled during the four weeks ending May 31.

Following his reception of l.w. transatlantic signals in Canada earlier this year, **Alan Roberts** (Quebec) checked the band late at night during April. Conditions were unsuitable except on April 15, when he heard a woman speaking in a language he did not recognise, followed by music that appeared to be N.African in origin. It seems likely that he was hearing a signal from Bechar, Algeria (1000kW), but no ident was heard. The signal was poor.

Alan says, "I'd always expected long distance l.w. reception to be better in winter than in summer, but openings on two nights this month (May) show how one could never be sure when DXing". Two DX signals were logged on May 8. At 0305UTC he heard a man speaking in French on 216kHz, assumed to be R.Monte Carlo via Roumoules (1400kW), but no ident obtained. At 0410 he heard a woman speaking in French on 162, probably Allouis, France (2000kW). On May 30 at 0405 a talk in Arabic and N.African music was heard on 153, probably from Bechar.

Medium Wave Reports

Whilst on the top of the Mendip Hills, **Sid Morris** searched for m.w. transatlantic DX on the nights of May 15-17. His Sangean ATS 803 was connected to a car radio antenna and he logged a total of 8 stations in Canada and the USA.

Broadcasts from 9 stations in Canada, the USA, the Caribbean and S.America were heard in Grimsby by **Jim Willett**. He logged VOCM in St.John's, NF on 590 as SIO222 at 2330. This was quickly followed by WINS in New York on 1010, SIO222 at 2350. By 0100 the signal from CJYQ in St.John's on 930 was peaking SIO333. The Atlantic Beacon, Turks & Caicos Is. on 1570 was heard at 0205 and R.Globo in Rio, Brazil became audible on 1220 at 0230, both SIO222.

In Worthing, **Ron Damp** heard the signals from CJYQ on 930 at 0045, rated 22222. Although he searched the band until 0300 only one other transatlantic signal was heard. It was WNEW in New York on 1130 and was 23222 at 0250.

After dark sky wave signals from stations in N.Africa have also been heard. From Algeria **Sheila Hughes** (Morden) logged Algiers 891 (600/300kW) 33333 at 2105; Alger 981 (600/300kW) 33333 at 2120; Les Trembles, 549 (600kW) 32222 at 2235; Ain Beida 531 (600/300kW) 22222 at 2345. Over in Newry, Co.Down **Eddie McKeown** heard Tunis-Djedeida, Tunisia on 630 (600kW) 32132 at 2032. **George Millmore** (IOW) also found reception from N.Africa and S.Europe quite good after dark. He rated the 6kW signal from Messina, Italy on 1143 as SIO222.

Short Wave Reports

Conditions in the **25MHz (11m)** band have enabled some signals to reach their intended target area, but outside those areas reception has been very unreliable. Potent signals from RFI via Issoudun on 25.820 (Fr to E.Africa 0700-1550) have reached **Jana Arunachalam** in Thumrait, Oman, typically 44445 at 1050. Earlier in the year the signals from RFI on 25.820 and DW via Julich on 25.740 (Ger to E.Asia, M.East 1100-1355) were reaching E.Canada, but Alan Roberts says the transmission times are now unsuitable for the prevailing conditions. At best the signals rate 25222, but often they are 15111 or inaudible.

Reception of these signals is usually poor in the UK

Medium Wave Chart

Freq kHz	Station	Country	Power kW	Listener
520	Hof-Saale	Germany	0.2	C*,K*
531	Ain Beida	Algeria	600	I*,L*
531	Leipzig	Germany	100	K*,M*
531	Oviedo	Spain	10	K*
540	BRT-2 Wavre	Belgium	150/50	E,K*,L,M,O
549	Les Trembles	Algeria	600	I*,L*
549	DLF Bayreuth	Germany	200	K*,L,M,O
558	Espoo	Finland	100	K*
558	Valencia	Spain	20	K*,L*
567	Berlin	Germany	100	K*
567	RTE-1 Tullamore	Ireland (S)	500	D,E,L,M,O
576	Stuttgart	Germany	500	K*,M*
585	FIP Paris	France	8	L,O
585	RNE-1 Madrid	Spain	200	K*,L*,M
594	Frankfurt	Germany	1000/400	K*,L*,M*
594	Muge	Portugal	100	K*,L*
603	Lyon	France	300	L
603	Sevilla	Spain	20	K*
603	BBC-4 Newcastle	UK	2	E,K*
612	RTE-2 Athlone	Ireland (S)	100	D,E*,L,M
612	Lerida	Spain	10	L*
612	Tallinn	Estonia	100	L*
621	RTBF-1 Wavre	Belgium	80	L,O
621	Barcelona	Spain	10	K*
630	Vigra	Norway	100	K*,L*
630	Tunis-Djedeida	Tunisia	600	K*
639	La Coruna	Spain	100	K*,L*,M*
648	BBC Orfordness	UK	500	F*,I*,K*,L,M,)
657	Burg	Germany	250	K*
657	RCE-2 Madrid	Spain	20	K*,L*
657	BBC- Wrexham	UK	2	E,M
666	Bodenseesender	Germany	300/180	K*
666	Lisboa	Portugal	135	L*
675	Marseille	France	600	E*.K*
675	Hilversum-3 Lopic	Holland	120	B,L,
684	RNE-1 Sevilla	Spain	250	K*
684	Beograd	Yugoslavia	2000	K*
693	Berlin	Germany	250	K*
693	BBC Droitwich	UK	150	E*,M,N,O
702	Aachen/Flensburg	Germany	5	K*
711	Rennes 1	France	300	B,H,L,M*
711	Heidelberg	Germany	5	K*
720	Norte	Portugal	100	K*
720	BBC-R4 London	UK	0.5	E*,L
729	RTE-1 Cork	Ireland (S)	10	D,M
729	Oviedo	Spain	50	K*,L*
738	Paris	France	4	K*,L
738	RNE-1 Barcelona	Spain	250	K*,L*
747	Hilversum-2 Flevo	Holland	400	B,J,K*,L,M
756	Brunswick	Germany	800/200	K*,L*
756	BBC-R4 Redruth	UK	2	L
765	Sottens	Switzerland	500	K*,L*,M
774	BBC-Enniskillen	Ireland (N)	1	D
774	San Sebastian	Spain	60	K*,L*
783	Burg	Germany	1000	K*,L*,M*
792	Sevilla	Spain	20	K*.L*
801	M'chen-Ismaning	Germany	300	E*.K*
801	RNE-1	Spain	20	K*
810	SER Madrid	Spain	20	K*
810	BBC- Burghead	UK	100	M
810	BBC-Westerglen	UK	100	K,L*
828	Corca Dhuibhne	Ireland (S)	1	D
837	Nancy	France	200	K*
837	R.Popular, Sevilla	Spain	10	L*
846	Rome	Italy	540	B,K*,L*,M
855	Berlin	Germany	100	K*
855	Murcia	Spain	125	K*,L*
864	Paris	France	300	K*,L,M
873	AFN via Frankfurt	Germany	150	E*,K*,L*,M,P*
873	Zaragoza	Spain	20	L*
882	COPE Malaga	Spain	5	K*
882	BBC-Washford	UK	100	H,K,L,M,O
891	Algiers	Algeria	600/300	I*,K*,L*,M*
891	Hulsberg	Holland	20	K*,L
900	Milan	Italy	600	K*,L*
909	BBC-Brookmans	UK	140	M
909	BBC Moorside	UK	200	E
918	R.Intercont.	Spain	20	K*,L*
927	BRT-1 Wolvertem	Belgium	300	B,K*,L,M,O
936	Bremen	Germany	100	B,K*,L*,M*
936	SER Lerida	Spain	2	K*
945	Toulouse	France	300	K*,L*
954	RCE Madrid	Spain	20	K*,L*
963	Sofia	Bulgaria	150	K*
963	Pori	Finland	600	K*,L*,M
972	Hamburg	Germany	300	B,K*,L*,M*
981	Alger	Algeria	600/300	I*,L*
990	SER R.Bilbao	Spain	10	K*
999	R.Popular, Madrid	Spain	20	K*
1008	Hilversum-5 Flevo	Holland	400	B,L,M,O
1008	Malaga	Spain	?	K*
1017	Rheinsender	Germany	600	K*,L*,M*
1017	RNE-5 Burgos	Spain	5	K*
1026	Graz-Dobl	Austria	100	K*
1035	Prog.3 Lisbon	Portugal	120	K*,L*
1044	Dresden	Germany	250	K*
1044	Sebaa-Aioun	Morocco	300	L*
1053	BBC-R1 Droitwich	Uk	150	M,O
1053	Zarogoza	Spain	10	K*
1062	Kalundborg	Denmark	250	K*,L*
1071	Brest	France	20	H,K*,L
1071	Lille	France	40	O
1071	Rajkot	India	1000	A
1071	Bilbao	Spain	5	K*
1080	Katowice	Poland	1500	K*,L*
1089	BBC-Brookmans	UK	150	M
1098	Nitra	Czechoslovakia	1500	L*
1098	Dammam	Saudi Arabia	5	A
1098	RNE-5	Spain	10	K*
1107	AFN via Munich	Germany	40	K*
1107	RNE-5 Barcelona	Spain	20	K*
1116	SER-Pontevedra	Spain	2	K*
1125	La Louviere	Belgium	20	K*,L,O
1125	RNE 5	Spain	10	L*
1134	Valencia	Spain	10	L*
1134	Zadar	Yugoslavia	1200	K*,M
1143	AFN via Stuttgart	Germany	10	K*,M
1143	Messina	Italy	6	L*
1152	RNE-5	Spain	10	K*
1161	Stara Zagora	Bulgaria	500	K*
1161	Strasbourg (F.Int)	France	200	K*
1179	Santiago	Spain	10	K*
1179	Solvesborg	Sweden	600	G*,K*,L*,M,P
1188	Kuurne	Belgium	5	K*,L,O
1188	Al-Hiswah	Yemen	400	A
1197	VOA via Munich	Germany	300	K*,M
1206	Wroclaw	Poland	200	B
1215	COPE Castellon	Spain	2	K*
1224	Vidin	Bulgaria	500	K*
1233	Melnik	Czechoslovakia	400	K*
1242	Marseille	France	150	K*
1251	Huisberg	Netherlands	10	K*
1260	VOA via Rhodes	Greece	500	K*
1260	Valencia	Spain	20	K*,L*
1269	Neuminster	Germany	600	E*,K*,L*,M
1278	RTE-2	Ireland (S)	10	B,D,E,K*,L*,M
1287	Litomysl/Liblice	Czechoslovakia	300/200	K*,L*
1287	Melnik	Czechoslovakia	400	B
1296	San Sebastian	Spain	5	K*
1296	BBC Orfordness	UK	500	K*,L*,N*,O
1305	Orense (RNE5)	Spain	5	K*
1314	Kvitsoy	Norway	1200	E*,I*,K*,L,M
1323	R.Moscow/Leipzig.	Germany	150	B,K*
1332	Rome	Italy	300	K*,L*
1341	BBC-Lisnagarvey	Ireland (N)	100	E*,L*,M
1350	Nancy/Nice	France	100	K*,L
1350	VOA via Manama	Bahrain	50/25	A
1359	Berlin	Germany	250/100	K*
1368	Manx R., Foxdale	IOM	20	D,E*,K*
1377	Lille	France	300	K*,L,M,O
1377	Ukraine	Ukraine	50	C
1386	Kaliningrad	Russia	500	K*,L*,M
1395	R.Tirana/Lushnje	Albania	1000	B,K*,M
1404	Brest	France	20	H,K*,L
1413	BBC/Masirah Is.	Oman	1500	A
1413	RCE Zaragoza	Spain	20	K*
1422	Heusweiler	Germany	1200/600	E*,K*,L*,M*
1422	Riyadh	Saudi Arabia	20	A
1431	Dresden	Germany	250	K*
1449	Berlin	Germany	5	K*
1467	TWR Monte Carlo	Monaco	1000/400	I*,K*,L*,M,N*
1476	Wien-Bisamberg	Austria	600	B,K*,L*,M
1494	Clermont-Ferrand	France	20	K*,L*
1503	Stargard	Poland	300	K*,L*
1512	BRT Wolvertem	Belgium	600	E*,I,K*,L,M,O
1521	Kosice	Czechoslovakia	600	K*,L*
1530	Vatican R., Rome	Italy	150/450	I*,K*,L*
1539	Mainflingen	Germany	700	K*,L*,M
1557	Nice	France	300	K*
1566	Sarnen	Switzerland	300	K*
1575	Burg	Germany	250	K*,M
1575	Genoa	Italy	50	L*
1593	Langenberg	Germany	400/800	E*,K*,L*,M*,N
1602	Vitoria	Spain	10	K*
1611	Vatican R., Rome	Italy	5	J*

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:

A: Jana Arunachalam, Thumrait, Oman.
B: Vera Brindley, Woodhall Spa.
C: Tim Bucknall, Congleton
D: Tim Bucknall, Llanberis.
E: Scott Caldwell, Warrington.
F: J. Eaton, Woking
G: Francis Hearne, Bristol.
H: Simon Hockenhull, E.Bristol.
I: Sheila Hughes, Morden.
J: Rhoderick Illman, Oxted.
K: Eddie McKeown, Newry.
L: George Millmore, Wootton IOW.
M: Sid Morris, Rowley Regis.
N: Tom Smyth, Co.Fermanagh
O: Phil Townsend, E.London.
P: Michael Williams, Redhill.

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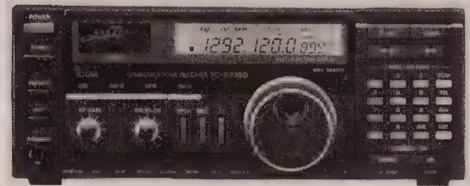

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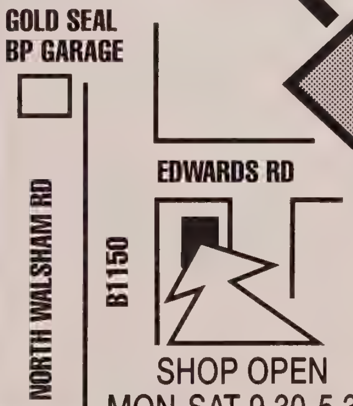

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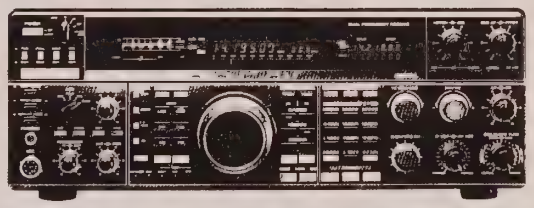

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because the signals arrive via back-scatter and other modes. In E.London, **Phil Townsend** listened to RFI and DW at lunchtime. Whilst in Coverack, **Simon Hockenhull** logged the Voice of the UAE in Abu Dhabi on 25.690 (Ar to Far East 0900-1100) as 25333 at 1005. In Congleton, **Tim Bucknall** rated R.Nederlands 25.940 (Du to W.Africa 1030-1115, Sun only) as SIO253 at 1047.

In the **21MHz (13m)** band good reception of R.Australia's signals has been noted here: Darwin 21.525 (Eng to SE.Asia 0100-0800) was SIO444 at 0630 by **Cyril Kellam** in Sheffield, 21.725 (Eng to S.Asia 0900-1257) 44444 at 1250 by **Tony Singh** in Hitchin; Carnarvon 21.775 (Eng to Asia 0100-0900) 33333 at 0649 by **Ken Milne** in Basingstoke. Some mornings the 21.725 signal has been clearly heard in Southern Africa, **P.Guruprasad** (Madikwe) rated them 45333 at 0915.

In the morning, R.Japan via Moyabi 21.575 (Eng, Jap to Europe, M.East, Africa 0700-0830) was noted as 'good' at 0700 by **Ernest Randall** in Dalton; R.Czechoslovakia 21.705 (Eng to Asia, Pacific 0730-0800) 43343 at 0735 by **Chris Shorten** in Norwich; R.Pakistan, Islamabad 21.520 (Eng to Europe 0800-0845) 44444 at 0800 in Morden; VOA via Kavala 21.455 (Eng to M.East, N.Africa, Europe 0800-1100) SIO333 at 0823 by **Philip Rambaut** in Macclesfield; AIR via Aligarh 21.735 (Eng to NE.Asia 1000-1100, Th to Thailand 1115-1200) 33443 at 1055 by **Peter Polson** in St.Andrews; R.Pakistan, Islamabad 21.520 (Eng to Europe 1100-1120) 42333 at 1100 in Newry; UAE R.Dubai 21.605 (Ar, Eng to Europe 0615-1645) SIO444 at 1120 by **John Coulter** in Winchester; Croation R, Zargreb 21.480 (Eng 1205-1208) 34543 at 1206 by **David Edwardson** in Wallsend; BSKSA, Saudi Arabia 21.505 (Ar [Home Service] to N.Africa 1030-1700) 55444 at 1250 by **J. Eaton** in Woking.

Local Radio Chart

Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum R.	I	7.50	B,I,M
585	R.Solway	B	2.00	B,H,J*
603	Invicta Snd(Coast)	I	0.10	B,G,I,J,M
630	R.Bedfordshire	B	0.20	C*,G,I,J,L,M
630	R.Cornwall	B	2.00	I,M
657	R.Clwyd	B	2.00	H,I,J,L,M
657	R.Cornwall	B	0.50	I
666	DevonAir R.	I	0.34	G,I,M
666	R.York	B	0.80	A,D,J*,M
729	BBC Essex	B	0.20	I,L,M
738	Hereford/Worcester	B	0.037	L,M
756	R.Cumbria	B	1.00	H
765	BBC Essex	B	0.50	I,J,L,M
774	R.Kent	B	0.70	I,L,M
774	R.Leeds	B	0.50	D
774	Severn Sound (3CR)	I	0.14	I,J,M
792	Chiltern R.	I	0.27	G,I,J,L,M
801	R.Devon	B	2.00	E,F,G,I,J*,M
828	Chiltern Radio	I	0.20	C*,E,L,M
828	R.Aire(Magic 828)	I	0.12	A,B,D
828	R.WM	B	0.20	J
828	2CR	I	0.27	E,F,I,M
837	R.Cumbria	B	1.50	D
837	R.Leicester	B	0.45	A,G,I,J,L,M
855	R.Devon	B	1.00	I,M
855	R.Lancashire	B	1.50	D,H,J*
855	R.Norfolk	B	1.50	A,G,I,L,M
873	R.Norfolk	B	0.30	G,I,J*,L,M
936	GWR (Brunel R.)	I	0.18	G,I,J,M
945	R.Trent (GEM-AM)	I	0.20	D,J,M
954	DevonAir R.	I	0.32	G,I,M
954	R.Wyvern	I	0.16	J,M
990	WABC (Nice & Easy)	I	0.09	J,M
990	R.Devon	B	1.00	G,I,M
990	Hallam R.(C.Gold)	I	0.25	A
999	R.Solent	B	1.00	F,G,IM
999	R.Trent (GEM-AM)	I	0.25	A,M
999	Red Rose R.	I	0.80	D,H
1017	WABC Shrewsbury	I	0.70	D,J,M
1026	R.Cambridgeshire	B	0.50	A,L,M
1026	R.Jersey	B	1.00	F,I,M
1035	R.Kent	B	0.50	I,L,M
1035	R.Sheffield	B	1.00	D
1035	West Sound	I	0.32	H,K
1116	R.Derby	B	1.20	A,D,H*,J,M
1116	R.Guernsey	B	0.50	F,I,M
1152	BRMB (Xtra-AM)	I	3.00	E,J
1152	LBC (L.Talkback R)	I	23.50	G*,I,M
1152	R.Broadland	I	0.83	A,H*,M
1161	GWR (Brunel R.)	I	0.16	G,M
1161	R.Bedfordshire	B	0.10	C*,L,M
1161	R.Sussex	B	1.00	I,M
1161	Viking R. (C.Gold)	I	0.35	A
1170	Ocean Sd.(SCR)	I	0.12	G,H*,I,M
1170	R.Orwell (SGR-FM)	I	0.28	L,M
1170	Signal R.	I	0.20	D,J
1242	Invicta Sound (Coast)	I	0.32	B*,L,M
1242	Isle of Wight R.	I	0.50	B,F,I,J*,M
1251	Saxon R. (SGR-FM)	I	0.76	L,M
1260	GWR (Brunel R.)	I	1.60	G,H*,I,M
1260	Leicester (GEM-AM)	I	0.29	J,M
1260	Marcher Sound	I	0.64	D
1278	Pennine R.(C.Gold)	I	0.43	D,I
1305	Red Dragon (Touch)	I	0.20	F,I,J*,M
1323	R.Bristol (Som.Snd)	B	0.63	J*,M
1323	S'thern Sound (SCR)	I	0.50	G,I,L,M
1332	Hereward R.(WGMS)	I	0.60	B,J,L,M
1332	Wiltshire Sound	B	0.30	H*,I,M
1359	Essex R.(Breeze)	I	0.28	G,H*,L,M
1359	Mercia Snd (Xtra-AM)	I	0.27	J,M
1359	R.Solent	B	0.85	I,M
1368	R.Lincolnshire	B	2.00	B*,M
1368	R.Sussex	B	0.50	I,L
1368	Wiltshire Sound	B	0.10	H*,I,J
1413	Sunrise R.	I	0.125	I,L,M
1431	Essex R.(Breeze)	I	0.35	B*,G,L,M
1431	R.210 (Cl. Gold)	I	0.14	G,I,M
1449	R.Peterboro/Cambs	B	0.15	I,J,M
1458	GLR	B	50.00	I,M
1458	GMR	B	5.00	D,H,K
1458	R.Cumbria	B	0.50	H
1458	R.Devon	B	2.00	M
1458	R.Newcastle	B	2.00	I
1458	Radio WM	B	5.00	J
1476	City Sound (1st Gold)	I	0.50	G*,I,L,M
1485	R.Humberside	B	1.00	A,H
1485	R.Merseyside	B	1.20	D,J
1485	R.Sussex	B	1.00	I,L,M
1503	R.Stoke-on-Trent	B	1.00	D,H*,I,J,M
1521	R.Mercury	I	0.64	B,G*,I,L,M
1530	Pennine R.(C.Gold)	I	0.74	D,H
1530	R.Essex	B	0.15	I,L,M
1530	R.Wyvern	I	0.52	I,J
1548	Capital R. (Gold)	I	97.50	C*,G*,I,M
1548	R.Bristol	B	5.00	F,H,K
1548	R.City (City Talk)	I	4.40	D
1557	Chiltern R.(Gold)	I	0.76	C*,H,J
1557	Ocean Sound (SCR)	I	0.50	G,I,M
1557	R.Lancashire	B	0.25	D
1557	Tendring R.(Mellow)	I	?	M
1584	R.Nottingham	B	1.00	D,M
1584	R.Shropshire	B	0.50	J
1602	R.Kent	B	0.25	I,J*,L,M

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:
A: Vera Brindley, Woodhall Spa.
B: Tim Bucknall, Congleton.
C: Tim Bucknall, Newport Pagnell.
D: Scott Caldwell, Warrington.
E: Francis Hearne, N.Bristol.
F: Simon Hockenhull, E.Bristol.
G: Sheila Hughes, Morden.
H: Eddie McKeown, Newry.
I: George Millmore, Wootton, IOW.
J: Sid Morris, Rowley Regis.
K: Tom Smyth, Co.Fermanagh.
L: Phil Townsend, E.London.
M: John Wells, East Grinstead.

Long Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	K*,N
153	Donebach	Germany	500	A,B,D,G*,H,I*,J,M,N
153	Brasov	Romania	1200	B,G*
162	Allouis	France	2000	B,D,F,G,H,I,J,K*,L,M,N
171	Kaliningrad	Russia	1000	B,C,G,H*,I,J,M
171	Moscow	Russia	500	D*,M
177	Oranienburg	Germany	750	A*,B,C*,D,F,G*,H,I*,J,M,N
183	Saarlouis	Germany	2000	A,B,D*,F,G,H,I,J,M,N
189	Caltanissetta	Italy	10	N
198	BBC Droitwich	UK	500	A,D,F,G,H,I,L,M,N
198	BBC Westerglen	UK	50	B,G
207	Munich	Germany	500	B,E,G*,H,I*,J,M,N
207	Azilal	Morocco	800	E
216	RMC Roumoules	S.France	1400	A,B,D,G,H*,I,J,K*
216	Oslo	Norway	200	B,F*,G*,N
225	Konstantinow	Poland	2000	B,G*,H*,I,J,M,N
234	Junglinster	Luxembourg	2000	B,D,F,G,H,I,J,M,N
234	St.Petersburg	Russia	1000	B,G*
243	Kalundborg	Denmark	300	B,D*,F,G*,H,I*,J,M,N
252	Tipaza	Algeria	1500	E*,F*,N
252	Atlantic 252	S.Ireland	500	A,B,E,F,G,H,I,J,L,M,N
261	Burg	Germany	200	H,I,N
261	Moscow	Russia	2000	B,G*,J,M
270	Topolna	Czechoslovakia	1500	B,F*,G*,H,I,M,N
270	Orenburg	USSR	15	C*
279	Minsk	Byelorussia	500	A*,B*,C,F*,G*,H*,I*,J,N

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:
A: Vera Brindley, Woodhall Spa.
B: Kenneth Buck, Edinburgh.
C: Tim Bucknall, Congleton.
D: Scott Caldwell, Warrington.
E: Simon Hockenhull, E.Bristol.
F: Sheila Hughes, Morden.
G: Eddie McKeown, Newry.
H: George Millmore, Wootton, IOW.
I: Sid Morris, Rowley Regis.
J: Fred Pallant, Storrington.
K: Alan Roberts, Quebec, Canada.
L: Tom Smyth, Co.Fermanagh.
M: Phil Townsend, E.London.
N: John Wells, East Grinstead.

Later, R.Nederlands via Flevo 21.665 (Eng to S.Asia 1330-1430) 44545 at 1400 in Thumrait; R.Finland via Pori 21.550 (Eng to M.East, E.Africa 1405-1430) 34333 at 1407 by **Rhoderick Illman** in Oxted; WCSN, Maine 21.545 (Eng to Europe 1800-2000) 45434 at 1845 by **Darran Taplin** in Brenchley; R.Nederlands via Bonaire 21.590 (Eng to Africa 1730-2025) SIO455 at 1900 by **Kenneth Buck** in Edinburgh; WYFR, Florida 21.615 (Eng, Ger, It to Europe 1600-?) 35433 at 1915 in Worthing; HCJB, Ecuador 21.455 (world-wide u.s.b. + p.c.) SIO433 at 1939 by **Bill Clark** in Rotherham; RCI via Sackville 21.675 (Eng, Fr to Europe 1900-2059) 54445 at 2010 in Coverack; RFPI, Costa Rica 21.465 (Eng to Caribbean 1800-0330) SIO433 at 2215 by **Bryan Kimber** in Hereford; VOFC via Florida 21.720 (Eng to Europe 2200-2300) 44334 at 2215 by **Peter Pollard** in Rugby.

UK listeners have reported good DX reception in the **17MHz (16m)** band. Several of R.Australia's broadcasts were logged here: Shepparton 17.795 (Eng to C.Pacific areas 2130-0600) rated 44444 at 0330 in Hitchin, 17.715 (Eng to Pacific areas 0000-0830) 44344 at 0440 in Norwich; Carnarvon 17.670 (Eng to Pacific areas 0400-0700) SIO433 at 0610 in Hereford; Darwin 17.565 (Eng to Asia 1430-1800) 44333 at 1530 in St.Andrews. R.New Zealand's transmission to Pacific areas on 17.770 (Eng 2130-0800) has often reached the UK well. In W.London, **Bill Griffith** logged it one morning as peaking 54555 at 0610!

Some broadcasts to distant places were logged in the morning: SRI via Sottens 17.565 (Eng to M.East, Africa 0600-0630) SIO433 at 0615 by **Francis Hearne** in N.Bristol; VOA via Kavala 17.705 (Ar to M.East, N.Africa 0330-0800) SIO333 at 0740 in Macclesfield; R.Finland via Pori 17.800 (Eng to Japan, Far East 0830-0855) 34333 at 0845 in Thumrait; BBC via Mahe 17.885 (Eng to E.Africa 0600-1400) 54444 at 0915 in Morden; Voice of Greece, Athens 17.525 (Gr, Eng to Australia 0800-0950) SIO444 at 0940 in Sheffield; R.Pakistan, Islamabad 17.902 (Eng to Europe 1100-1120) 24122 at 1104 in Newry; Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) heard at 1258 by **Roy Patrick** in Derby; R.Cairo via Abis 17.595 (Eng to S.Asia 1215-1330) 44544 at 1240 by **Darren Beasley** in Bridgwater.

Good reception was noted later from R.Romania Int, Bucharest 17.850 (Eng to Europe 1300-1355) SIO444 at 1351 in Winchester; RTM, Morocco 17.595 (Fr, Eng to M.East, N.Africa 1400-1700) 44344 at 1607 by **Vera Brindley** in Woodhall Spa; R.Pakistan, Islamabad 17.555 (Eng to M.East 1600-1630) 33333 at 1630 by **Robert Connolly** in Kilkeel; R.Algiers Int. via Bouchaoui 17.745 (Fr, Eng to M.East, Europe 1700-1800) 43444 at 1714 in Basingstoke; VOA via Selebi-Phikwe 17.650 (Eng to Africa 1600-2200) 45434 at 1900 in Brenchley; BBC via Ascension Is. 17.880 (Eng to C.Africa 1745-2030) 33343 at 1920 in Worthing; HCJB, Ecuador 17.790 (Cz, Sw, Ger, Fr, Eng, Sp to Europe 1800-2230) SIO444 at 1902 in Edinburgh; R.Havana, Cuba

Tropical Bands

Freq MHz	Station	Country	UTC	DXer
2.560	Xinjiang	China	2355	F
3.215	R.Orange	S.Africa	1810	L.,P
3.220	R.HCJB Quito	Ecuador	0415	P
3.240	TWR	Swaziland	2051	K
3.255	BBC via Maseru	Lesotho	1925	F,L
3.300	R.Cultural	Guatemala	0331	F
3.315	AIR Bhopal	India	2305	L
3.315	SLBS Freetown	Sierra Leone	2126	K
3.325	FRCN Lagos	Nigeria	2245	F
3.330	R.Kigali	Rwanda	1825	P
3.365	R.Rebelde, La Julia	Cuba	0100	K,P
3.365	GBC Radio 2	Ghana	2057	F,G,K,L,M,O
3.380	R.Malawi	Malawi	1930	F
3.915	BBC Kranji	Singapore	1613	K,L
3.940	PBS Hubei Wuhan	China	2100	P
3.955	BBC Skelton	England	2000	K,L
3.965	RFI Paris	France	1920	C,E,I,K,L,N
3.980	VOA Munich	W.Germany	1910	I,K,L
3.985	R.Beijing, China	via SRI Berne	2045	C,K
3.985	SRI Berne	Switzerland	2005	C,I,L
3.995	DW Cologne (Julich)	Germany	1930	K,L
4.010	R.Frunze 1	Kirghizia	2320	K
4.055	R.Moskva 1 (Kalinin)	Russia	1948	C,K
4.500	Xinjiang	China	2225	F,P
4.600	R.Baghdad	Iraq	1805	L,P
4.635	R.Dushanbe	Tadzhikistan	0015	K
4.650	R.Santa Ana	Bolivia	2300	P
4.735	Xinjiang	China	2230	F,L
4.740	Ashkhabad	Russia	2322	K
4.750	R.Bertoura	Cameroon	1942	K,M
4.765	Brazzaville	PR Congo	1900	B,D,E,F,I,K,L,M,P
4.770	FRCN Kaduna	Nigeria	1900	B,F,K,L,M,P
4.783	RTM Bamako	Mali	2130	E
4.795	R.Douala	Cameroon	1925	B,K,M,P
4.795	R.Moscow (Kharkov)	Ukraine	2015	L
4.800	LNBS Lesotho	Maseru	2057	M
4.805	R.Nac.Amazonas	Brazil	2245	E,F,P
4.810	R.Yerevan	Armenia	1953	E,K,L
4.815	R.diff TV Burkina	Ouagadougou	2100	E,K,M
4.820	R.Moskva 4	Russia	1954	B,E,K
4.825	R.Moscow (Yakutsk)	Siberia	2022	B
4.825	Kharkov	Ukraine	2357	I,K
4.830	R.Tachira	Venezuela	2330	E,F,G
4.832	R.Reloj	Costa Rica	0420	P
4.835	R.Tezulutlan, Coban	Guatemala	0305	G
4.835	RTM Bamako	Mali	1957	B,G,I,K,L,M
4.845	ORTM Nouakchott	Mauritania	1955	B,I,K,L,M
4.850	R.Yaounde	Cameroon	1916	B,I,K,M
4.850	AIR Kohima	India	2030	I
4.850	R.Tashkent 2	Uzbekistan	0018	K
4.860	R.Moscow	Russia	1935	L
4.865	PBS Lanzhou	China	2155	K,L
4.870	R.Cotonou	Benin	2100	B,E,F,I,K,L,M,P
4.885	R.Clube do Para	Brazil	2245	F
4.885	Voice of Kenya	Kenya	2022	M
4.895	Voz del Rio Arauca	Colombia	0410	P
4.895	R.Moscow (Kalinin)	Russia	2055	B,I,K,M
4.900	V de la Rev.Conakry	Guinea	2120	E
4.905	R.Nat.N'djamena	Chad	1950	B,E,K,L,M
4.910	R.Zambia, Lusaka	Zambia	2102	E,M
4.915	R.Anhanguera	Brazil	2245	E
4.915	R.Ghana, Accra	Ghana	1945	E,F,I,K,L,M
4.915	Voice of Kenya	Kenya	1920	M
4.920	R.Quito	Ecuador	0330	G
4.930	R.Moscow	Russia	2010	B,K,L
4.935	Voice of Kenya	Kenya	1914	B,E,F,H,J,K,L,M
4.940	SLBC (Eng.Comm.)	Sri Lanka	1540	A
4.940	R.Kiev 2	Ukraine	1923	B,I,K,L,M
4.950	R.Nac.Luanda	Angola	1900	M,P
4.958	R.Baku	Azerbaydzhan	1950	B
4.960	AIR New Delhi	India	0032	K
4.960	R.Baku 2	Russia	2015	I
4.975	R.Uganda, Kampala	Uganda	1940	M
4.975	R.Dushanbe	Tadzhikistan	2328	K
4.990	AIR via Madras	India	0021	K
4.990	FRCN Lagos	Nigeria	1909	B,D,L,M
5.005	R.Nacional, Bata	Eq.Guinea	2100	B,E,M
5.010	R.Garoua	Cameroon	1911	B,E,G,K,M
5.010	SBC Singapore	Singapore	1400	A
5.015	R.Moskva 2	Russia???	0149	K
5.020	SLBC Tamil Home Sce.	Sri-Lanka	1545	A
5.025	R.Parakou	Benin	2035	L
5.035	R.Bangui	C.Africa	2110	G,K,P
5.035	R.Alma Ata	Kazakshtan	2057	B,F,G,I,K
5.040	Vos del Upano, Macas	Ecuador	2315	E
5.040	R.Tbilisi 1	Georgia	2057	B,C
5.045	R.Cultura do Para	Brazil	0315	G
5.047	R.Togo, Lome	Togo	2055	B,E,G,I,K,M
5.050	SBC Singapore	Singapore	2200	P
5.050	R.Tanzania	Tanzania	2024	B,M
5.055	RFO Cayenne(Matoury)	French Guiana	0445	K
5.075	Caracol Bogata	Colombia	0015	G
5.260	R.Alma Ata 2	Kazakhstan	2100	G,I,K

DXers:

A: Jana Arunachalam, Thumrait, Oman.
B: Darren Beasley, Bridgwater.
C: Scott Caldwell, Warrington.
D: Bill Clark, Rotherham.
E: Antonio De Abreu-Teixeira, Evesham.
F: David Edwardson, Wallsend.
G: Bill Griffith, W.London.
H: P.R. Guruprasad, Madikwe, S.Africa.
I: Sheila Hughes, Morden.
J: Rhoderick Illman, Oxted.
K: Eddie McKeown, Newry.
L: Sid Morris, Rowley Regis.
M: Fred Pallant, Storrington.
N: Peter Pollard, Rugby.
O: Richard Radford-Reynolds, Guildford.
P: Jim Willett, Grimsby.

17.705 (Eng to Europe 2000-2100) 44344 at 2057 in Oxted; also 17.815 (Eng to Africa 2000-2100) 44443 at 2028 by **Scott Caldwell** in Warrington; RCI via Sackville 17.875 (Eng to Europe 2100-2159) 53343 at 2159 by **Robin Harvey** in Bourne; VOFC via Okeechobee 17.750 (Eng to Europe 2200-2300) SIO444 at 2234 in Rotherham; VOA via Kavala 17.810 (Eng to M.East, N.Africa 2200-0000) 44444 at 2234 in Rugby; Voice of the UAE in Abu Dhabi 17.855 (Eng to USA? 2200-0000) 55455 at 2240 in Woking.

Good **15MHz (19m)** reception from many areas has been noted. The most distant signals reach the UK from R.Australia, but they are beamed to other areas: Shepparton 15.240 (Eng to Pacific 0000-0930) 32332 at 0715 in Newry, 15.320 (Eng to New Guinea 2100-0730) 54444 at 2216 in Woking; Darwin 15.170 (Eng, Chin to Asia 0900-1400) 33433 at 1105 in St.Andrews.

Many of the 19m signals are meant for listeners in Europe. Among those noted were RFPI Costa Rica 15.030 (Eng 1800-1200) SIO333 at 0730 in Sheffield; R.Japan via Yamata 15.250 (Eng, Jap 0700-0900, also to M.East, Africa) SIO322 at 0751 by **Ron Pearce** in Bungay; RAI Italy 15.485 (It [R.Uno home service] 0800-1700) heard at 1200 in Derby; WCSN, Maine 15.665 (Eng 1400-1600) 34333 at 1439 in Oxted; Voice of Vietnam, Hanoi 15.010 (Eng, Viet, Russ, Fr, Sp 1600-0000?) 44333 at 1740 in Woodhall Spa; WCSN, Maine 15.665 (Eng 1800-2200?) 34232 at 1935 in Worthing; RCI via Sackville 15.325 (Eng 1900-1929) SIO444 at 1910 in Edinburgh; RNB, Brazil 15.265 (Eng, Ger 1800-2050) 44444 at 1915 in W.London and 43334 at 1952 by **Charles Beanland** on Gibraltar; WWCR Nashville 15.690 (Eng 1200-0000) 33322 at 1952 in Basingstoke; R.Kuwait 15.505 (Ar 1800-0000, also to N.Africa) 53553 at 2036 in Bridgwater; WYFR, Florida 15.566 (Eng 2100-2200, also to Africa) 55444 at 2138 in Warrington; R.Korea 15.575 (Ger, Fr, Russ, Eng, Sp, Port, It 1800-?) heard at 2145 by **Julian Wood** in Elgin.

Among those noted to other areas were the BBC via Woofferton 15.070 (Eng to M.East, Africa 0700-2315) 34434 at 1100 in Thumrait and 55444 at 1820 in Madikwe; R.Denmark via RNI 15.270 (Da to W.Africa 1330-1355) SIO444 at 1330 by **Tom Smyth** in Co.Fermanagh; R.Veritas Asia, Philippines 15.140 (Eng ident 1500, Pil 1505-1600) 'poor' at 1500 in Dalton; Vatican R, Italy 15.090 (Am, Fr, Eng, Port to Africa 1700-1900) 54454 at 1730 in Norwich; R.Portugal via S.Gabriel 15.250 (Port to Africa 1500-1900) SIO434 at 1810 in Winchester; Voice of Greece, Athens 15.630 (Gr, Eng to Africa? 1800-1850?) 45434 at 1845 in Brenchley; VOA via Selebi-Phikwe 15.495 (Eng to Africa 1900-2200) SIO322 at 2109 in Macclesfield; VOA via Tangier 15.205 (Eng to M.East, N.Africa 1700-2200) 33343 at 2112 in Bourne and via Greenville 15.580 (Eng to Africa 1600-2200) SIO322 at 2139 in Rotherham; R.Sofia, Bulgaria 15.330 (Eng to USA 2145-2315) SIO544 at 2300 in Hereford; R.Damascus, Syria 15.095 (Eng to USA 2110-2210) 43444 at 2206 in Kilkeel; AIR Delhi 15.080 (Home Service) heard at 0230 in Hitchin.

Particularly good reception of R.Australia's **13MHz (22m)** broadcast to S.Asia via Carnarvon 13.755 (Eng 1430-2100) has been noted in the UK. Their signal peaked 55555 at 1749 in Woking. It was also logged in Thumrait as 43443 at 1435. Later, their Carnarvon broadcast to SE.Asia 13.705 (Eng 2100-2300) was SIO322 at 2226 in Rotherham.

Also heard here were SRI via Sottens 13.635 (Eng to Asia, Australia 1100-1130) 54544 at 1106 in St.Andrews; R.Austria Int. via Moosbrunn 13.730 (Ger, Fr, Eng, Sp to Europe 0400-1700) 45454 at 1137 in Newry; UAE R.Dubai 13.675 (Eng to Europe 1030, 1330 and 1630) 43343 at 1340 in Norwich and SIO455 at 1630 in Edinburgh; KSDA, Guam 13.720 (Eng to S.Asia, E.Africa 1700-1900) 55444 at 1745 by **Richard Radford-Reynolds** in Guildford; DW via Julich 13.790 (Eng to W.Africa, M.East 1900-1950) 35544 at 1925 in Brenchley; RCI via Sackville 13.650 (Eng to Europe 1930-1959) 55555 at 1955 in Bridgwater; R.Kuwait 13.620 (Eng to Europe, USA 1800-2100) 34423 at 2027 in Basingstoke; SRI via Sottens 13.635 (Eng to M.East, Africa 2000-2030) SIO334 at 2016 by **Michael Williams** in Redhill; WHRI Red Lion 13.760 (Eng to Europe, Canada 1700-0000) SIO444 at 2044 in Bungay; Voice of the UAE in Abu Dhabi 13.605 (Relay of Capital FM) 53444 at 2240 in Worthing.

The **11MHz (25m)** band carries many programmes for European listeners. Some stem from HCJB, Ecuador 11.730 (Eng 0700-0830) 55555 at 0745 in Norwich; R.Romania Int, Bucharest 11.940 (Eng 1300-1355) SIO322 at 1330 in Co.Fermanagh; R.Finland via Pori 11.755 (Eng 1405-1430, also to W.Africa) SIO444 in E.London; REE Spain 11.920 (Sp 0700-1500) 44444 at 1442 in Woodhall Spa; UAE R.Dubai 11.795 (Eng 1600-1640, also to N.Africa) 44444 at 1600 in Rugby; R.Pakistan, Islamabad 11.570 (Eng, Ur 1700-1900) 54554 at 1825 in Woking; ISBS, Iceland 11.402 (Ic 1855-1930) SIO444 in Winchester; AIR via Aligarh 11.620 (Hi, Eng 1845-2230) heard at 1900 in Hitchin and 44444 at 2025 on Gibraltar; R.Algiers via Bouchaoui 11.715 (Eng 2000-2100, also to M.East) SIO433 at 2000 in Hereford; R.Damascus, Syria 12.085 (Eng 2005-2105) SIO444 at 2018 in Sheffield; R.Beijing, China 11.500 (Eng 2000-2200) 33332 at 2030 in Warrington; R.Japan via Moyabi 11.735 (Jap, Eng 2200-0000) 44434 at 2330 in Morden.

Throughout the day there are numerous broadcasts to other areas. Among those noted were R.Nederlands via Bonaire 11.895 (Eng to Pacific areas 0930-1030) 24333 at 0946 in Basingstoke; BBC via Masirah Is. 11.760 (Eng to M.East 0900-1400) 44445 at 1100 in Thumrait; Polish R, Warsaw 11.840 (Eng to Africa? 1500-1555) 44444 at 1520 in St.Andrews; R.Pakistan, Islamabad 11.570 (Eng to M.East, N.Africa 1600-1630) 35543 at 1600 in Wallsend; Vatican R, Italy 11.625 (Eng to Africa 1730-1800) 43433 at 1730 in Brenchley; Voice of Israel, Jerusalem 11.587 (Eng to N/C.America 1900-1930, also to W.Europe) noted as 'excellent' in Dalton; VOA via Ascension Is 11.820 (Eng to Africa 2000-2030) 54554 at 2005 in Bridgwater; Wings of Hope, Lebanon 11.530 (Ar, Eng, Russ to M.East 0300-2300?) 53334 at 2100 in W.London; R.Sweden 11.730 (Eng to Asia, Australia 2030-2130) 53343 at 2101 in Bourne; Voice of Israel, Jerusalem 11.603 (Eng to N/C.America 2130-2200, also to W.Europe) SIO333 at 2130 in N.Bristol; DW via Julich 11.865 (Port to S.America 2130-2300) SIO444 at 2130 by **Antonio De Abru-Teixeira** in Evesham; R.Sofia, Bulgaria 11.720 (Eng to USA 2145-2315) 35443 at 2210 in Worthing; R.Tirana, Albania 11.825 (Eng to USA? 2200-2230?) SIO323 at 2210 in Redhill; BBC via Ascension Is. 11.750 (Eng to S.America 2200-0330) SIO444 at 2330 in Rowley Regis; R.Sofia, Bulgaria 11.660 (Eng to USA 0000-0045) 44344 at 0032 in Newry.

The reports included some of the **9MHz (31m)** broadcasts to Europe: BBC via Limassol 9.660 (Eng 0800-1515, also to Scandinavia) SIO212 at 1110 in Macclesfield; RFI via Allouis 9.805 (Eng 1230-1300) SIO333 at 1230 in Redhill; R.Norway Int, Oslo 9.590 (Eng 1300-1330, Sat/Sun only) SIO434 at 1300 in E.London; Polish R, Warsaw 9.525 (Eng 1700-1755) 43333 at 1715 in Morden; REE via Noblejas 9.875 (Eng 1900-2000) 34334 at 2000 in W.London; R.Pyongyang, N.Korea 9.345 (Eng 2000-2050, also to M.East, Africa) 34543 at 2020 in Wallsend; Voice of Turkey 9.445 (Eng 2000-2100), noted as 'very good' at 2045 in Dalton; R.Budapest, Hungary 9.835 (Eng 2100-2200) 43233 at 2100 in Bourne; VOIRI, Iran 9.022 (Fr, Ger, Eng, Sp, Ar 1800-2230) SIO444 at 2120 in Evesham; R.Cairo via Abis 9.900 (Eng 2115-2245) 33333 at 2141 in Kilkeel.

Also logged were R.Nederlands via Bonaire 9.630 (Eng to Pacific areas 0730-0830) 53444 at 0806 in Guildford; R.Korea 9.870 (Kor, Eng, Fr, Ar, Ger, to M.East, Africa 1700-?) 42232 at 1700 in Madikwe; R.Sweden via Horby 9.655 (Sw, Eng, Fr, Sp to M.East, Africa 2000-2200, also to Europe) 44444 at 2002 on Gibraltar and SIO322 at 2030 in N.Bristol; SRI via Schwarzenburg 9.885 (Eng to M.East, Africa 2000-2030) 54545 at 2025 in Rugby; WSHB Cypress Creek 9.465 (Eng to USA, Caribbean 2200-0000) SIO444 at 2305 in Rowley Regis.

Some of the **7MHz (41m)** transmissions come from distant places: RSA, S.Africa 7.230 (Fr to Africa 0300-0400?) 53343 at 0300 in Norwich; also 7.270 (Eng to Africa 0300-0400?) 33433 at 0325 in Thumrait; Voice of Nigeria, Ikorodu 7.255 (Ha, Swa, Fr, Eng to W.Africa 0455-2300) 33433 at 0504 in Newry; WYFR Okeechobee 7.355 (Eng to Europe, Africa 0600-0800) heard at 0640 in Congleton; RFPI, Costa Rica 7.375 (Eng to Caribbean 0000-1200) SIO233 at 0730 in Hereford; AIR via Aligarh 7.412 (Eng to Europe 1845-1945, 2045-2230) 54434 at 1850 in Worthing, 33434 on Gibraltar and SIO433 at 2216 in Rotherham.

Many of the **6MHz (49m)** broadcasts to Europe stem from stations in Europe. Those noted were DW, Germany 6.115 (Ger 0800-1700) 43444 at 1438 in Woodhall Spa; R.Austria Int 6.155 (Eng 1830-1900) 54444 at 1830 in St.Andrews; R.Yugoslavia, Belgrade 6.100 (Eng to Europe 1830-1900?) SIO333 at 1834 in Elgin; Polish R, Warsaw 6.135 (Eng 1930-2025) 43433 at 1930 in Brenchley; R.Czechoslovakia 6.055 (Eng 2000-2030) 54554 at 2015 in Bridgwater; R.Budapest, Hungary 6.110 (Eng 2100-2200) 43333 at 2100 in Morden; R.Sweden via Karlsborg 6.065 (Eng 2030-2130) 55555 at 2058 in Warrington; R.Finland via Pori 6.120 (Eng 2130-2155) SIO444 at 2130 in N.Bristol.

Also logged were the BBC via Antigua 5.975 (Eng to Caribbean 2000-0430) SIO333 at 0402 in Rotherham; R.Inconfidencia, Brazil 6.010 (Port 24hrs) SIO222 at 2250 in Evesham; R.Nacional da Amazonia, Brazil 6.180 (Port 0800-0000?) 43333 at 2300 in Kilkeel; Alma Ata, Kazakhstan 5.915 (Eng to C.Asia 2330-0200) 34533 at 2352 in Wallsend.

LA RADIO MONDIALE

RFI sticker

Transatlantic DX Chart

Freq kHz	Station	Location	Time (UTC)	DXer
		USA		
890	WLS	Chicago	0120	B
1010	WINS	New York	2350	C
1130	WNEW	New York	0250	A
1440	WFTQ	Worcester	0140	B
1500	WTOP	Washington	0210	B
1510	WSSH(WKKU)	Boston	0400	C
1520	WWKB	Buffalo	0130	B
1600	WWRL	New York	0150	B
		Canada		
580	CFRA	Ottawa	0535	C
590	VOCM	St. John's	2330	C
620	CKCM	Grand Falls	0305	C
930	CJYQ	St John's	0045	A,C
1110	CBD	St John's	0150	C
1220	CKCW	Moncton	0135	B
1400	CBG	Gander	0155	B
1410	CIGO	Pt Hawkesbury	0240	B
		C. America & Caribbean		
1570	Atlantic B'con	Turks & Caicos Is	0205	C
		South America		
1220	R. Globo	Rio, Brazil	0230	C

DXers:

A: Ron Damp, Worthing
B: Sid Morris, Mendip Hills
C: Jim Willett, Grimsby

Station Addresses

BBC Wiltshire Sound,
56/58 Prospect Place,
Swindon SN1 3RW.

ILR Mercia Sound/Xtra AM,
Hertford Place,
Coventry CV1 3TT.

Radio Habana Cuba,
Apartado 6240,
La Habana,
Cuba.

Radio Inconfidencia,
C.P. 1027,
30130 Belo Horizonte, Brazil.

Radio CBG,
PO Box 369,
Gander, NF A1V 1W7, Canada.

Radio WNEW,
655 3rd Avenue,
New York, NY 10017, USA.

Equipment Used

Jana Arunachalam, Thumrait, Oman: Panasonic RF-B45 or Sony ICF-7600DS + 6m wire.
Charles Beanland, Gibraltar: Sangean ATS-803 + a.t.u. + r.w or Howes AA2.
Darren Beasley, Bridgwater: Philips D2935 + a.t.u. + 10m wire.
Vera Brindley, Woodhall Spa: Sangean ATS-803A + whip or r.w.
Kenneth Buck, Edinburgh: Lowe HF-225 + r.w. in loft or screened loop.
Tim Bucknall, Congleton: Sony ICF-2001D + AN-1.
Scott Caldwell, Warrington: Saisho 2000 or Sony ICF-2001 + r.w.
Bill Clark, Rotherham: Sony ICF-2001D + built-in whip or r.w.
Robert Connolly, Kilkeel: Sangean ATS-803A + 30m wire in loft.
John Coulter, Winchester: Yaesu FRG-7 + r.w.
Ron Damp, Worthing: Racal RA17 + Hex Loop or 30m inverted V dipole.
Antonio De Abreu-Teixeira, Evesham: Sony ICF-2001D + 12m wire.
J. Eaton, Woking: Lowe HF-225 + Datong A270 in loft.
David Edwardson, Wallsend: Trio R600 + inverted V trap dipole.
Bill Griffith, London: Matsui MR-4099 + 25m wire.
Robin Harvey, Bourne: Matsui MR-4099 + built-in whip.
Francis Hearne, N.Bristol: Sharp WQT370 + r.w.
Simon Hockenhull, E.Bristol: Philips D2345 + built-in whip.
Sheila Hughes, Morden: Sony ICF-7600DS + loop or Panasonic DR48 + 15m wire.
Rhoderick Illman, Oxted: Kenwood R5000 + Lowe Mag.Balun + 19m wire.
Cyril Kellam, Sheffield: Sony ICF-7600DS + AN-1 or 25m wire.
Bryan Kimber, Hereford: Zenith R7000 or Realistic SX190 + 25m wire.
Eddie McKeown, Co.Down: Tatung TMR-7602.
George Millmore, Wootton, IOW: Racal RA17L + v.l.f. converter + loop.
Ken Milne, Basingstoke: Matsui MR-4099 + 6m wire.
Sid Morris, Rowley Regis: Kenwood R5000 + 31m wire or Sangean ATS-803A.
Fred Pallant, Storrington: Trio R2000 + r.w. in loft.
Roy Patrick, Derby: Lowe HF-125 + 22m wire.
Ron Pearce, Bungay: Home-built single f.e.t (2N3819) straight set.
Peter Pollard, Rugby: Sony ICF-2001D + AN-1.
Peter Polson, St.Andrews: Lowe HF-225 + loop or indoor Joystick.
Richard Radford-Reynolds, Guildford: Sangean ATS-803A + 10m wire.
Philip Rambaut, Macclesfield: Int.Marine Radio R.700M + r.w.
Ernest Randall, Dalton: Lowe HF-225 + 15m wire or Realistic DX-390.
Alan Roberts, Quebec, Canada: Lowe HF-225 + 31m, 19m or 11m dipole.
Chris Shorten, Norwich: Matsui MR-4099 + 10m wire.
Tony Singh, Hitchin: Zenith 7000 + built-in whip.
Tom Smyth, Co.Fermanagh: Morphy Richards R191 or Vega Selena + whip.
Darran Taplin, Brenchley: Yaesu FRG-7700 + FRA-7700 or FRT-7700 + 35m wire.
Phil Townsend, London: LF converter + Lowe HF-225 + loop or a.t.u. + r.w.
John Wells, E.Grinstead: RCA AR88D + loop, also l.w. converter.
Jim Willett, Grimsby: RCA AR77 + 4m loop or Trio 9R-59DS + a.t.u. + X dipole.
Michael Williams, Redhill: Sony CFS-201L cassette radio + built-in whip.
Julian Wood, Elgin: Kenwood R2000 + Yaesu FRT-7700 a.t.u. + 6m wire.

watching brief

Andy Emmerson G8PTH
71 Falcutt Way, Northampton NN2 8PH

I am delighted to say some of our ATV repeaters are still active. Here is the news from the ones whose people have sent in reports.

Another First for GB3ZZ

GB3ZZ, the Severnside repeater covering Bristol, Cardiff and the Severn Estuary has chalked up another first for a British amateur television repeater station. The repeater now features a 24-hour weather satellite picture service that can be accessed by any user by means of the d.t.m.f. pad used for its other features. For the benefit of those who only watch the repeater (non-transmitting folk), a 40 second slot of weather satellite pictures circulates with the normal test card/text regime.

A crystal-controlled weather satellite receiver produces an audio signal, which is decoded to produce the picture. This is done in a digital framestore, to a design originally produced in the early 1980s by YU3UMV. The framestore produces a picture made up of 256 x 256 pixels with 64 levels of grey. This seems quite poor by some of today's high-resolution PC computer type displays, but I think that most people that watch it are reasonably satisfied with the results.

Many repeater users have been quite fascinated by the images produced by the system. It seems to be getting god use, especially when the forecasters say bad weather in on the way. For instance a very intense area of low pressure passed over Scotland, bringing a few days of unsettles weather. This showed up very well on the satellite, with the characteristic swirl of cloud around the depression. Those of you who are really interested in weather satellites may be interested in joining the Remote Imaging Group (RIG). RIG is an RSGB-affiliated society for people who specialise in the reception of weather satellite images. They produce a very good magazine at roughly quarterly intervals, packed full of information on the latest equipment for better reception and picture decoding. Full details of membership are available from Des Watson, Norton, Gote Lane, Ringmer, Lewes, East Sussex BN8 5HX. Don't forget to include an s.a.e. with your enquiry.

The Severnside Group are planning to enhance the present system; they say they are certainly not going to rest on their laurels! One enhancement will be to display both information channels of METEOSAT, Channel 1 on 1691MHz and Channel 2 on 1694.5MHz. The repeater logic to carry out the switching function should be ready soon and you will key *60# for Channel 1 and *61# for Channel 2.

A New Repeater for Humberside

Clive Reynolds G8EQZ, Andy Goy G4HJD and Richard Guttridge G4YTV are proposing to build and license an amateur television repeater operating in the 24cm band. a possible site has been found at Aldbrough, offering a good service area to the east of the Lincolnshire Wolds. This should provide a TV repeater service from Bridlington in the north to Cleethorpes in the south and Hull in the west.

The site at Aldbrough is owned by Tony Leake G0NAA who has a farm on the cliff top. The use of the site and the 23m lighting tower will be shared with Tony's antennas and those of GB3HA when it moves down the coast from Hornsea.

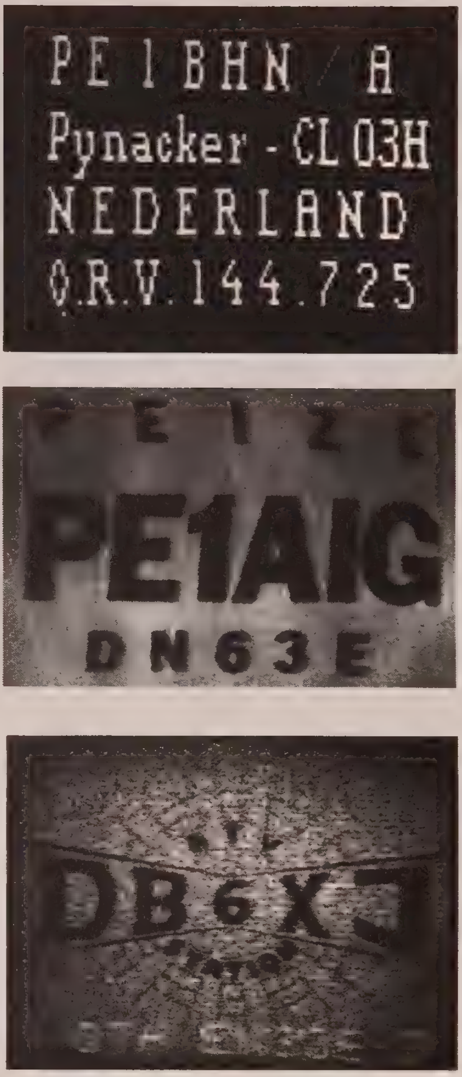
Whether the repeater goes ahead or not depends on user support. If this seems like a good idea to you why not contact Clive G8EQZ on (0482) 563691 or Richard G4YTV on (0964) 562948? You can also call them on 144.750MHz, the ATV talk-back frequency or write to the callbook addresses.

Home Counties News

GB3HV, which covers the Thames basin from a site above High Wycombe, went off the air at the beginning of September last year. Tests are going on to find a new location for the repeater and the new site is likely to be in High Wycombe since the group wants to retain or improve the existing coverage area. Garry G4CRJ and colleague G0DAE have been carrying out tests using the normal repeater flat-plate antennas atop a 15m mast with the dual input pre-amp at mast head, with transmit power split equally into two of the flat-plates. Test have been carried out in full duplex mode with talkback on 144,75MHz from Mike G8LES's car.

Stations who have given reports were dotted around the coverage area; the furthest station was in Southampton (about 80km away and definitely not line-of-sight). Results from the new site are promising and it seems better than the old one. They are looking at another site as well which has an 24m mast on it, which should be even better.

GB3HV beams ESE and SSE from High Wycombe so a problem with the old site was coverage into High Wycombe itself! This time they are planning on having a pair of low-gain antennas beaming north to cover the locals.



If you want your signals to go a long way under weak conditions, a clear display is essential. Two of these three shots win the G8PTH seal of approval - guess which!

A System for Solent

The newly formed Solent Amateur Radio and Television Club (G4PXH chairman, G8LES technical) will be building a new TV repeater that will be a copy of GB3HV.

It is hoped to locate it at Thorn Hill, near Southampton, which is 75m a.s.l. on a 24m mast. The repeater will be in beacon mode on the odd half hour allowing GB3HV to beacon for half on hour, starting on the hour. So stations who are in-between will be able to see both. A link is also planned between the two repeaters, the relay station to be located probably somewhere near Four Marks.

Andy Emmerson's column appears on a quarterly basis. In the intervening two issues this page is taken up by Brian Oddy's 'Long Wave Maritime Beacons' column, but 'Off The Record' will not be appearing until we can sort out the legal position with the DTI.

Watch this space.

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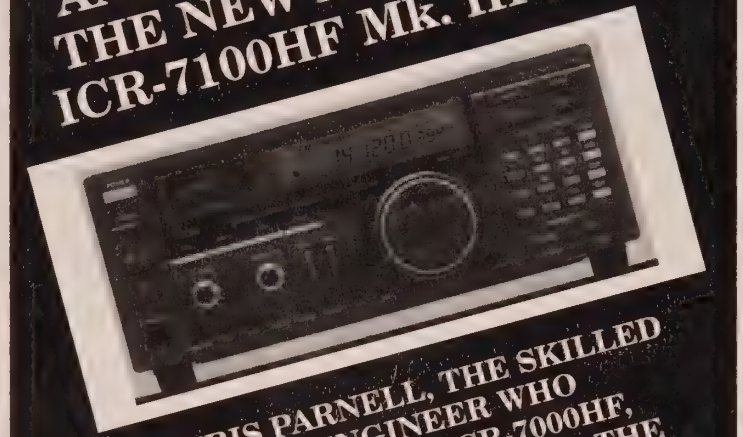

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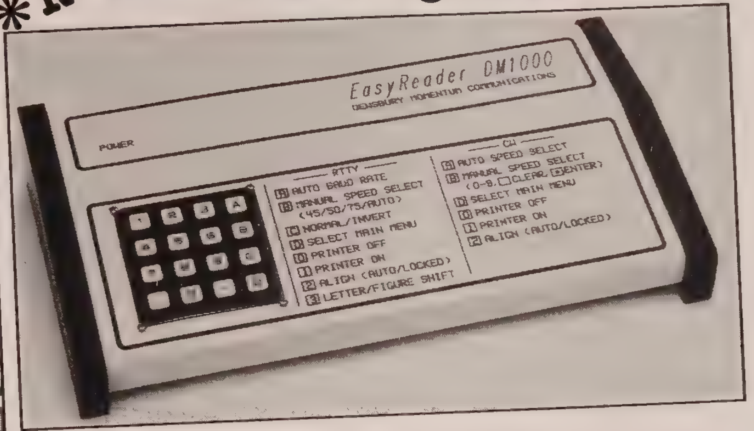
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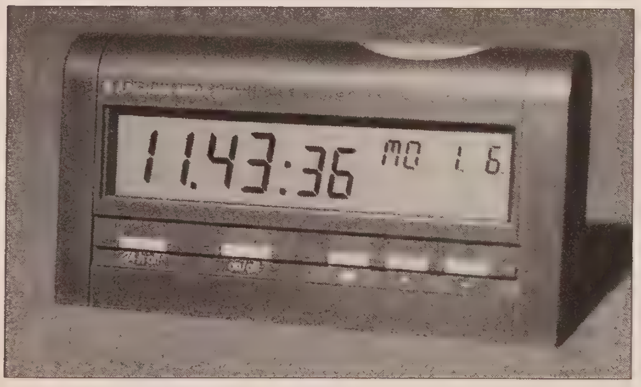
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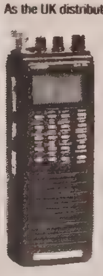

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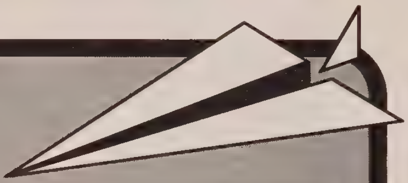

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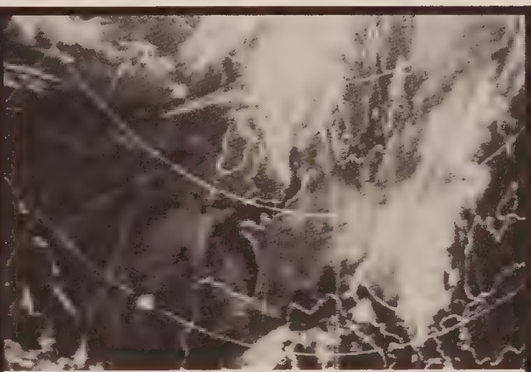

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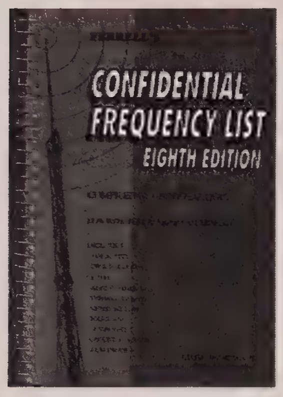

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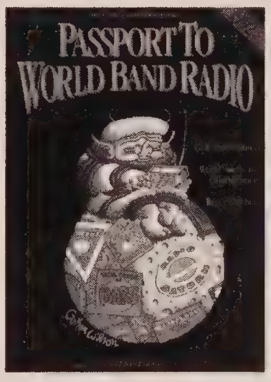

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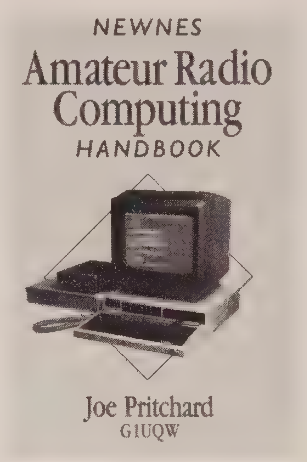

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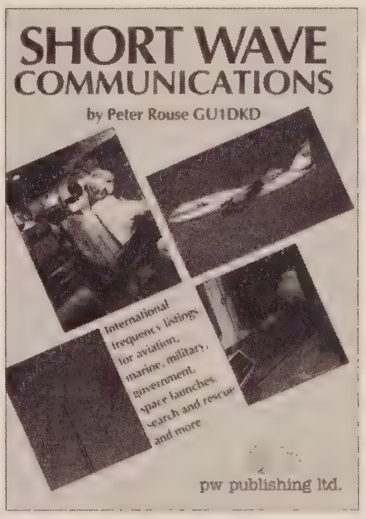
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More Trading Post on Page 76

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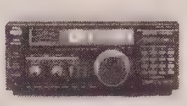

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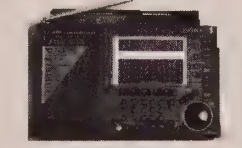

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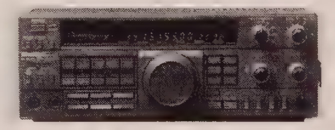

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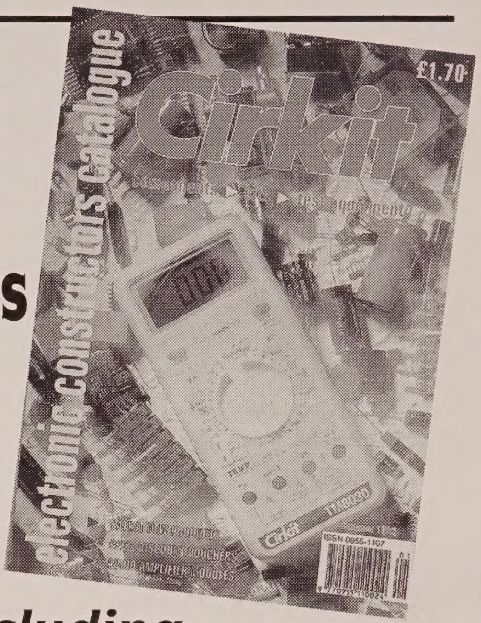

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FOR SALE for £1000 o.v.n.o. or **EXCHANGE** for a good quality camera with accessories. Sony ICF2001D + AN1 antenna, WIN108 airband receiver, Yupiteru MVT8000, Phillips D2935, Microreader MkII, Sekosha SP2000 printer, headphones + books and magazines. Gary Evason. 14 Willow Court, Abbey Road, Macclesfield, Cheshire SK10 3PD.

FOR SALE AOR 2800 as new under guarantee, boxed, with discone antenna, lot, £300 o.n.o. Tel: 081-864 6404 evenings & weekends.

FOR SALE Ten-Tec Paragon h.f. transceiver, general coverage, No 585, p.s.u. & f.m. board, mic, 0.05 filter, showroom condition, £1095 o.n.o. Mr Barrow. Tel: (0836) 582490 anytime.

FOR SALE Sony PRO 80 h.f., v.h.f. scanner, a.m./f.m./s.s.b., v.g.c., £150 o.n.o. Sony ICF-2001D h.f. airband v.g.c., £140 o.n.o. Sony AIR-7 v.h.f. scanner, £110 o.n.o. Tel: (0703) 270280 evenings after 7pm and weekends.

EXCHANGE Lowe HF-225, one year old for FRG-9600 or similar. **FOR SALE** Lowe SRX30D digital readout, £85 or w.h.y? in FAX/RTTY PC software. Tel: (0526) 398515.

WANTED Olivetti PCM15 handbook to buy or borrow. Tel: (0744) 50897 St Helens.

FOR SALE Yaesu FRG-7700, excellent condition, £170. Tel: (0482) 850522.

FOR SALE JVC DX/TV CX-60GB as new, £250. Aerial Techniques DR-B/1.2.3. antenna, £30, as new. Antiference UP-1300, v.h.f. masthead amp, used in loft, Band I, II, III - 40-230MHz, goes with DR-1.2.3., £18. Triax twin BB grid wideband u.h.f. antenna + hardware etc., £25. SWLs Global AT-1000 antenna tuner unit, £35, as new. Books/mags, s.a.s.e. for list. Buyer collects of carriage extra. **WANTED** Passport To Worldband Radio Handbook, 1988 & 1990, good price paid. Scanner AOR2001. Write quoting price, conditions, etc. M.B. Evans. 120 Loughton Way, Buckhurst Hill, Essex IG9 6AR.

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3
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M-SET
6
PRE /ATT
AFC ·ANL
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DN
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OFF PWR/VOL
ICOM
RX CONT
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IC-R100 Mobile/Base Receiver.

On the road or at home the IC-R100 is the ideal solution to receiving stations in the 500kHz - 1800MHz frequency range.

For listening convenience a 24-hour system clock with timer functions, 100 memory channels, direct keypad entry and handy scan functions are featured.

- AM, FM and FM-wide modes.
- 10 programmed scan ranges.
- Priority scan.
- Memory scan.
- Auto memory write scan.
- AFC function.
- Variety of tuning steps.
- Built-in preamp and attenuator.
- 150(W)x50(H)x181(D)mm.

IC-R1 Handheld Receiver.

Tune into the world around you on the IC-R1, one of the smallest receivers ever made. With continuous coverage from 2MHz - 1300MHz, AM, FM and FM-wide reception right into the palm of your hand.

- Ultra compact size.
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- Direct keyboard entry.
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- Auto power saver.
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- Advanced scan functions.
- Built-in S-meter.
- Built-in nicad batteries.
- 49(W)x102(H)x 35(D)mm.

Shown here are the two smallest receivers in the ICOM range, designed to complement the larger base stations. Whatever your requirement the answer is ICOM, so good to receive.

For further information about ICOM products and the location of your nearest authorised dealer please contact:
Icom (UK) Ltd. Dept SW Sea Street Herne Bay Kent CT6 8LD
Telephone: 0227 741741 (24hr). Fax: 0227 741742.

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HF-150
Compact Communications Receiver

£329 inc VAT

COMMUNICATIONS RECEIVER HF-150
MEM
12.095
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PHONES
MEM MODE FAST
RCL STO

Designed as a logical alternative to the Japanese 'push button portables', the HF-150 places a 'real radio' within your price reach. Whilst reflecting the Lowe approach to simplicity of operation, the HF-150 nevertheless has all the features and facilities you need. This truly is 'Real Radio'.

Frequency coverage: 30kHz - 30MHz
Modes: USB/LSB/AM/Sync. AM (Selectable S'band)
IF Bandwidths: 2.5kHz & 7kHz
Tuning: 8Hz steps with variable speed
Memories: 60 holding frequency & mode
Aerial inputs: 600 ohms, 50 ohms & Hi-Z Whip
Power: 12Vdc from mains adaptor (supplied)
Case: All-metal light alloy case
Size: 185mm(W) x 80mm(H) x 160mm(D)
Weight: 1.3kg (less batteries)

HF-235
MODE
21.470
A F GAIN
I F GAIN
PHONES
1 2 3
4 5 6
7 8 9
CANCEL 0 ENTER

HF-235
The Professionals' Choice

£1116 inc VAT

Frequency coverage:30kHz - 30MHz
Modes: AM/LSB/USB/CW/NBFM (Sync AM optional)
Filters: 6 Input bandpass filters
Tuning steps: 8Hz - 125Hz (stepped by mode)
Construction: Fully floating chassis
Remote control: RS232C Computer interface (optional)
Memories: 30 holding a host of data
Tuning: Spin-wheel, keypad & MHz button freq. entry
Power supply: 110-120 or 220-240Vac 50Hz
Size: 483mm(W) x 88mm(H) x 320mm(D)

HF-225
Gateway to the World

£429 inc VAT

MODE
22.049
HF-225
PHONES
VOLUME
TONE
CHANNEL
RECALL
STORE

Frequencies: 30kHz - 30Mhz
Tuning: 8Hz steps.
Memories: 30 channels
Filters: IF filters for all modes fitted
Tuning: Keypad & spin-wheel
AM/FM Sync. Detector (optional)
Keypad for remote entry (optional)
Excellent quality at reasonable cost

LOWE ELECTRONICS LIMITED

LOWE

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